

**CITY OF SOUTH EL MONTE
REGULAR MEETING OF THE SOUTH EL MONTE PLANNING COMMISSION**

*****SPECIAL NOTICE REGARDING COVID-19*****

On March 17, 2020, Governor Newsom issued Executive Order N-29-20 in response to the COVID-19 pandemic, which authorizes the Local Legislative body to hold public meetings via teleconferencing and waives all requirements of the Brown Act requiring the physical presence of Planning Commissioners, staff, or the public as a condition of participation in or quorum for a public meeting.

THIS IS A PLANNING COMMISSION MEETING BY TELECONFERENCE ONLY.

Members of the public will have access to listen to and participate in the meeting by calling-in at the information below. Teleconference participation shall be available to the public at the following USA Toll-Free number, 888-204-5987, Access Code: 9671457

Members of the public wishing to submit a general comment or a comment on an agenda item, can email ahernandez@soelmonte.org or call (626) 579-6540 to leave a voicemail message. All comments received by 5:00 p.m. on Tuesday, October 20, 2020 will be added to the Planning Commission agenda as part of the public comment.

OCTOBER 20, 2020, 6:00 P.M.

**CITY HALL CHAMBERS
1415 SANTA ANITA AVENUE
SOUTH EL MONTE, CA 91733**



**RUDY BOJORQUEZ, CHAIRPERSON
LARRY RODRIGUEZ, VICE-CHAIRPERSON
LEO BARRERA, COMMISSIONER
RUBY YEPEZ, COMMISSIONER
JEFF ORTIZ, COMMISSIONER**

**CHRISTY MARIE LOPEZ, ASSISTANT CITY ATTORNEY
COLBY CATALDI, DIRECTOR OF COMMUNITY DEVELOPMENT AND PUBLIC WORKS
IAN MCALEESE, ASSISTANT PLANNER
ANGIE HERNANDEZ, COMMISSION SECRETARY**

1. CALL TO ORDER

2. ROLL CALL

Commissioners: Bojorquez, Barrera, Yepez, Ortiz and Rodriguez

3. FLAG SALUTE

4. APPROVAL OF AGENDA

This is the time for the commission to remove any items from the agenda, continue, add items, to make a motion to rearrange the order of this agenda, or accept Agenda “as-is”.

5. PUBLIC COMMENT

Any person wishing to address the Planning Commission on any items not on the agenda, or any other matter, is invited to do so at this time. Pursuant to the Brown Act, the Commission cannot discuss or take action on items not on the agenda. Matters brought before the Commission that are not on the agenda may be, at the Commissions’ discretion, be referred to staff or placed on the next agenda.

6. CONSENT CALENDAR

6.a. Minutes for September 15, 2020

RECOMMENDATION: THEREFORE, STAFF RECOMMENDS that the Planning Commission approve the above reference minutes.

7. PRESENTATION

7.a. Consideration of Draft 2020 Local Hazard Mitigation Plan

RECOMMENDED ACTION: Staff recommends that the Planning Commission review and forward any recommendations to the City’s Hazard Mitigation Planning Team.

8. COMMISSIONERS’ AGENDA

8.a. Commissioner’s Report None.

9. STAFF ITEMS

9.a. Planner’s Report: None.

9.b. Secretary’s Report: None.

9.c. Director’s Report: None.

10. ADJOURNMENT

November 17, 2020 at 6:00 p.m.

**CITY OF SOUTH EL MONTE
PLANNING COMMISSION - MINUTES**
Tuesday, September 15, 2020, 6:00 P.M.

**THE PLANNING COMMISSION CONDUCTED THIS MEETING BY
TELECONFERENCE IN ACCORDANCE WITH CALIFORNIA
GOVERNOR NEWSOM'S EXECUTIVE ORDERS N-29-20
AND COVID-19 PANDEMIC PROTOCOLS**

1. CALL TO ORDER

Chairperson Bojorquez called the meeting to order at 6:01 p.m.

2. ROLL CALL

PRESENT Commissioners: Leo Barrera, Jeff Ortiz, Larry Rodriguez, Ruby Rose Yepez, and Chairperson Rudy Bojorquez.

Present via teleconference: Christy Marie Lopez, Assistant City Attorney; Rene Salas, Public Works Director; Ian McAleese, Assistant Planner; and Angie Hernandez, Planning Commission Secretary.

3. PLEDGE OF ALLEGIANCE

Commissioner Ortiz led the Pledge of Allegiance.

4. APPROVAL OF AGENDA

A motion was made by Yepez, seconded by Ortiz and carried 5-0, to approve the agenda.

Vote: 5-0

Ayes: Commissioners: Barrera, Ortiz, Rodriguez, Yepez, and Chairperson Bojorquez

Nays: None

5. PUBLIC COMMENT

Mayor Gloria Olmos congratulated Commissioner Larry Rodriguez on his appointment to the El Monte School Board.

Chairperson Bojorquez, with no further public comments, closed public comment.

6. CONSENT CALENDAR

6.a. Minutes for July 21, 2020

A motion was made by Ortiz, seconded by Barrera and carried 5-0 to approve Consent Calendar.

Vote: 5-0

Ayes: Commissioners: Barrera, Ortiz, Rodriguez, Yopez, and Chairperson Bojorquez

Nays: None

7. **NON-PUBLIC HEARINGS** – None.

7.a. **Review of The Palaces and Conditions of Approval for Conditional Use Permit No. 11-009**

Assistant Planner McAleese presented the staff report providing an over view of the report, violations of condition of approval for CUP 11-009 were listed. The following violations occurred: not providing city staff with the ABC licensing education completion certification, not providing city staff with a six-month review as directed in the original CUP and not notifying city staff of change of ownership. ABC suspended the license status based on the incident that occurred in April of 2018. City staff recommended Planning Commission review and evaluate whether the business is operating in compliance with the CUP and/or provide direction to staff to have the CUP agendized for Planning Commission review at a future meeting.

Discussion ensued by the Planning Commission with concerns related to the extension of the review period. Concerns about these conditions applying to new operator were also mentioned. After evaluating the current financial status of the economy and the effects of COVID-19, Planning Commission came to a unanimous agreement to bring back the applicant before the Commission in one year confirmed as September 2021.

Chairperson Bojorquez opened public comment, after determining there was no one else wishing to speak, Chairperson Bojorquez closed public comment.

The Commission gave direction to city staff to bring the applicant before the planning commission in September 2021.

A motion was made by Rodriguez, seconded by Barrera and carried 5-0 with direction to staff to have the applicant of CUP 11-009 also known as Palaces restaurant located at property at 9251 Garvey Ave #G-J, South El Monte, CA 91733 to return to the Planning Commission for a yearly review in September 2021.

Vote: 5 - 0

Ayes: Commissioners: Barrera, Ortiz, Rodriguez, Chairperson Bojorquez and Yopez

Nays: none

8. PUBLIC HEARINGS

8.a. Consideration of Resolution No. 20-08 Approving a Subdivision at 10715-10719 Rush Street to convert three existing warehouses into three warehouse condominiums to be able to sell as individual units.

Assistant Planner McAleese presented the staff report. As part of his report he included factual terms that date back to 1958 when the three independent standing buildings measuring 5,386, 3,454 and 3,052 square feet. Current use of two buildings are manufacturing businesses and the other is a wholesale business. Staff recommends the Planning Commission adopt the Resolution No. 20-08 and approve the Conditional Use Permit as conditioned.

Planning Commission discussion ensued regarding the benefits of granting each unit its own parcel for individual sale. Comments included the opportunities for a small business to own its building versus owning the land. The discussion included the tax benefits to the city, the occupancy versus vacancy rate and the definition of a condominium unit for sale in a Manufacturing zoned lot.

Chairperson Bojorquez opened public comment.

Mark Frietag, Applicant and property owner, made a statement directed to the Planning Commission, the three warehouses would be subdivided into separate for-sale lots allowing the current business owners the opportunity to purchase the lot where their business is conducted. The Commission asked him if all the units are currently occupied and he confirmed.

After determining there was no one else wishing to speak, Chairperson Bojorquez closed public comment.

A motion was made by Barrera, seconded by Rodriguez and carried 5-0, to adopt Resolution No. 20-08, allowing for the conversion of three existing warehouses into condominiums for sale at 10715-10719 Rush Street, South El Monte CA 91733.

Vote: 5-0

Ayes: Commissioners: Barrera, Ortiz, Rodriguez, Yepez, and Chairperson Bojorquez

Nays: None

9. COMMISSIONERS' AGENDA

Chairperson Bojorquez – Nothing to report.

Commissioner Rodriguez – Nothing to report.

Commissioner Ortiz – Nothing to report.

Commissioner Barrera – Nothing to report.

Commissioner Yepez – Nothing to report.

10. STAFF ITEMS

Planner's Report – Nothing to report.
Secretary's Report – Nothing to report.
Director's Report – Nothing to report.

11. ADJOURNMENT

A motion was made by Barrera, seconded by Ortiz and carried 5-0, to adjourn the meeting at 6:44 p.m.

Vote: 5-0

Ayes: Commissioners: Barrera, Ortiz, Rodriguez, Yopez, and Chairperson Bojorquez

Nays: None



Planning Commission Agenda Report

Agenda
Item No.
7.a.

DATE: October 20, 2020

TO: Honorable Chairman and Members of the Planning Commission

APPROVED BY: Colby Cataldi, Community Development Director

REVIEWED BY: Ian McAleese, Assistant Planner

PREPARED BY: Carolyn Harshman, Emergency Planning Consultants

SUBJECT: Consideration of Draft 2020 Hazard Mitigation Plan.

PURPOSE: The Disaster Mitigation Act of 2000 requires communities to develop, implement, and update hazard mitigation plans recognizing potential natural hazards and to identify and consider mitigation measures to reduce the risks associated with those hazards. The plan is a tool to aid in facility and infrastructure planning and improvements and is a requirement to qualify for federal hazard mitigation grants. The federal regulations require hazard mitigation plans to be updated every five years. The City's existing Hazard Mitigation Plan was approved by FEMA in 2009. The updated plan must first be conditionally approved by FEMA pending adoption by the local jurisdiction's governing body. Upon receipt of adoption, FEMA issues a Final Letter of Approval.

RECOMMENDATION: Staff recommends that the Planning Commission review and forward any recommendations to the City's Hazard Mitigation Planning Team.

ANALYSIS:

Two pieces are critical to the development of an update to the Hazard Mitigation Plan: Risk Assessment and the Mitigation Action Matrix. The Risk Assessment reviews natural, technological, and human-caused hazards posing a significant threat to the jurisdiction. Each hazard is assessed as to location, scope, and vulnerability. This process was enhanced with FEMA's software capable of projecting losses to services, structures, and populations. The software is HAZUS (Hazard United States). Each of the HAZUS maps are supporting by a projected loss report.

Through the planning process, the City's Hazard Mitigation Planning Team (HMP) developed a Mitigation Actions Matrix that identifies desired and planned projects including those from the existing City plans, including the General Plan and Capital Improvement Program that align with the Plan's goals: (1) protect life and property, (2) enhance public awareness, (3) preserve natural

systems, (4) encourage partnerships and implementation, and (5) strengthen emergency services. The adoption of the HMP will allow the City to seek mitigation grant funding when the opportunity becomes available. The HMP will be a living document and will be reviewed by the HMP team on a quarterly basis to ensure implementation of the Mitigation Actions Matrix.

Before you today is the Draft Plan that already reflects the input of the Planning Team. Input gathered from the Planning Commission will be added to the Third Draft Plan which will be distributed to the general public and external agencies. Incorporating that input, a Fourth Draft Plan will be sent to California Office of Emergency Services and FEMA for a formal review. Upon receipt of the Approval Pending Adoption from FEMA, the Final Draft Plan will be forwarded to the City Council for adoption.

ATTACHMENTS:

A – Draft, 2020 Hazard Mitigation Plan

Hazard Mitigation Plan



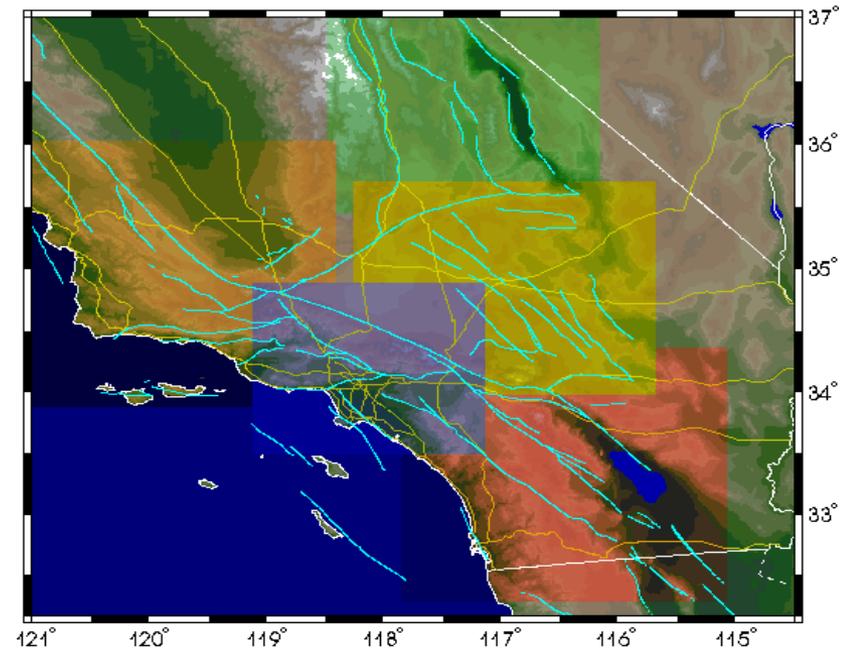
*Actions Taken to Minimize
or Eliminate Threats
Associated with Hazards*

Assessing Risks

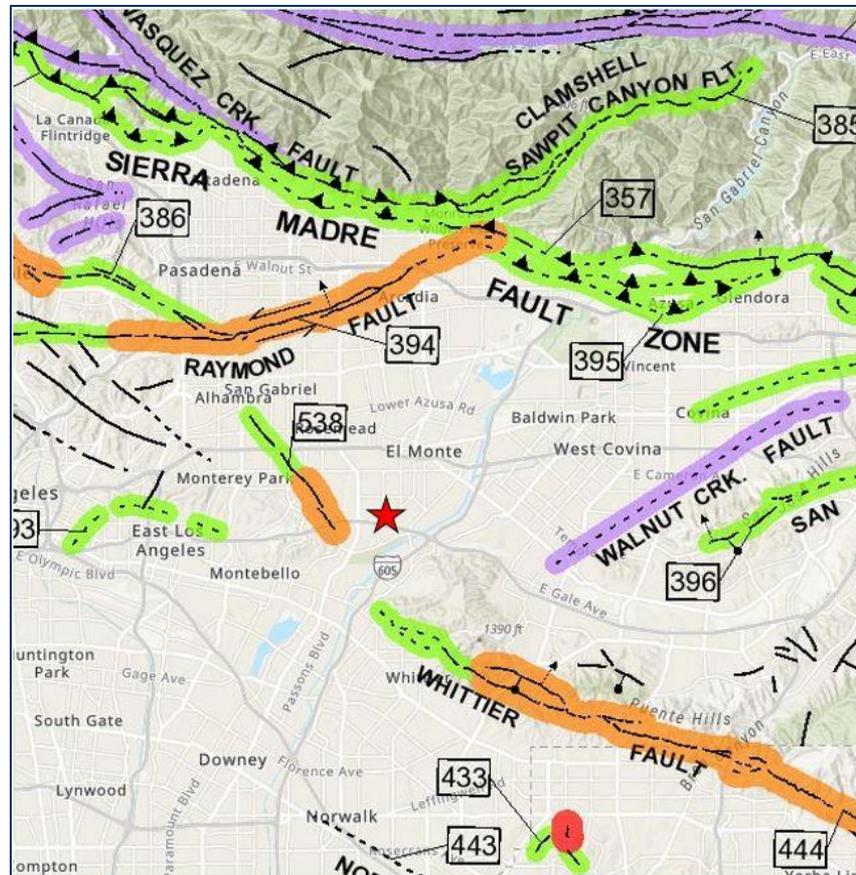
- A community needs to identify the characteristics and potential consequences of natural hazards. It is important to understand:
 - how much of the community can be affected by specific hazards; and
 - what the impacts would be on essential and critical facilities.

Identifying Hazards

- Earthquake
- Wildfire
- Flood
- Landslide
- Hazardous Materials



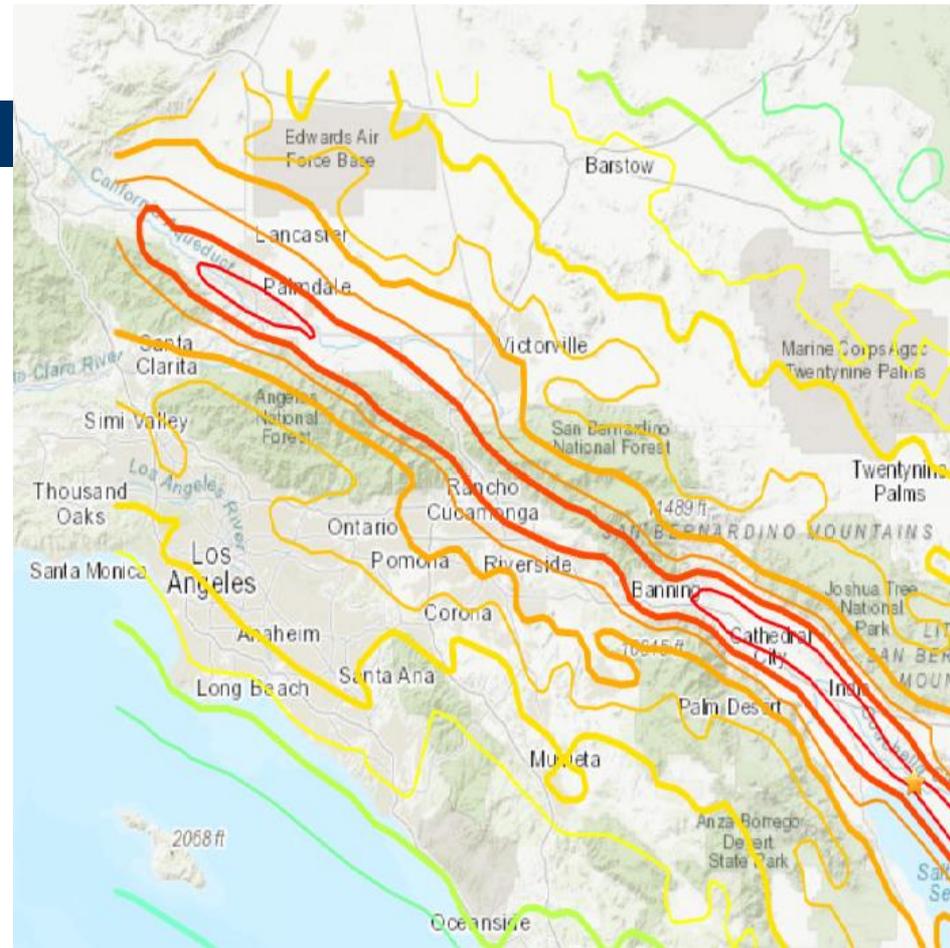
Seismic Hazards



Southern San Andreas M7.8

M 7.8 Scenario Earthquake - S. San Andreas; Mojave S

★ Epicenter



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Sierra Madre Fault M 7.2

★ Epicenter

M 7.2 Scenario Earthquake - Sierra Madre



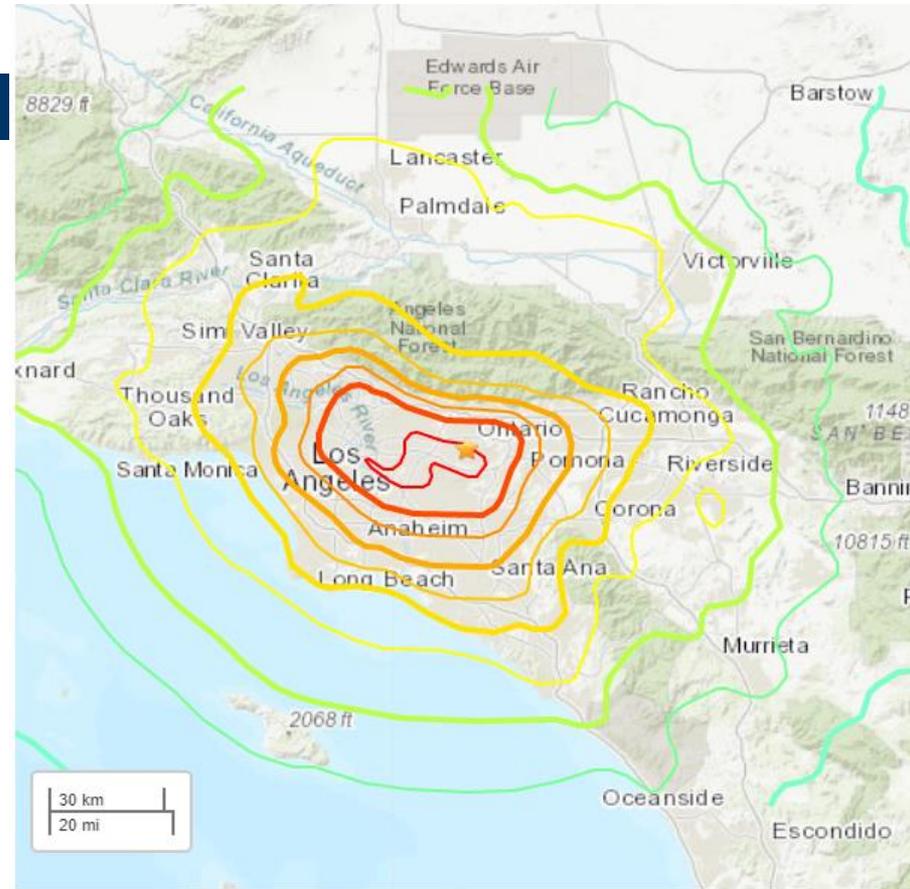
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)

Puente Hills Fault M 7.1

★ Epicenter

M 7.1 Scenario Earthquake – Puente Hills

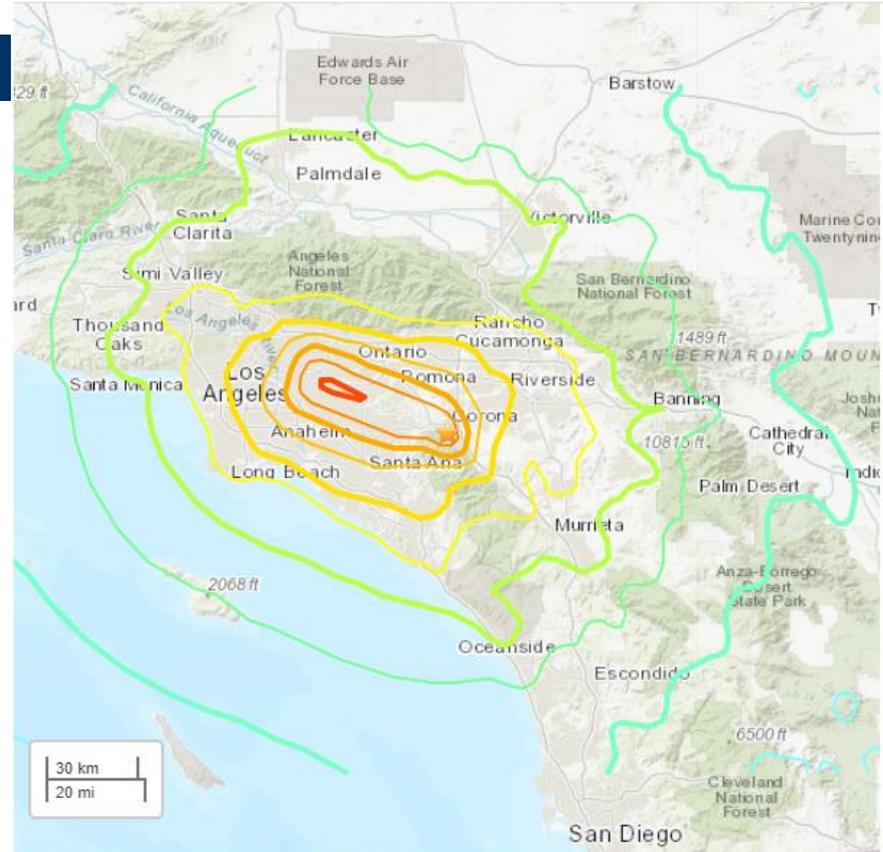


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Whittier-Elsinore Fault M 7.0

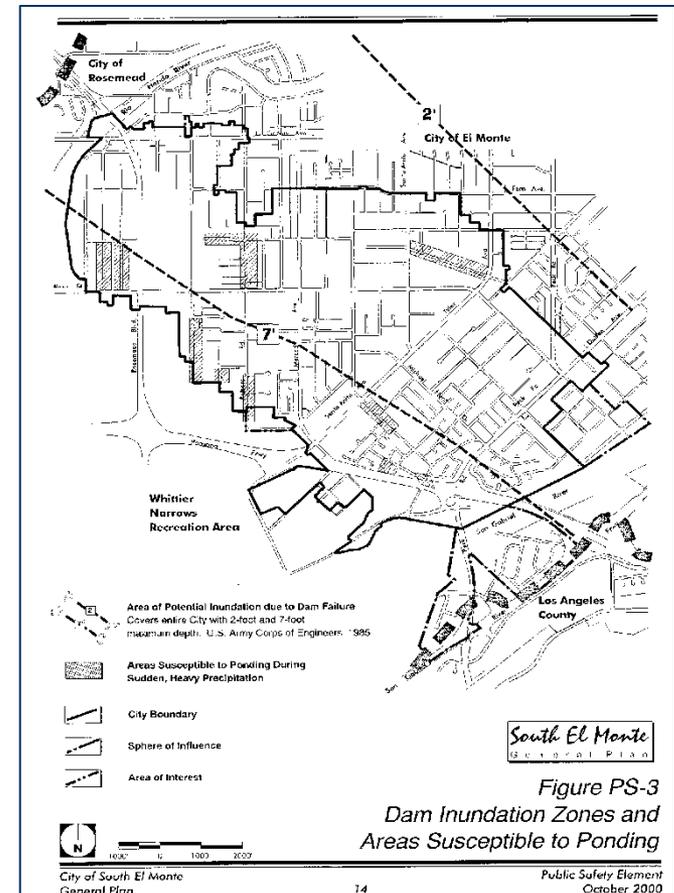
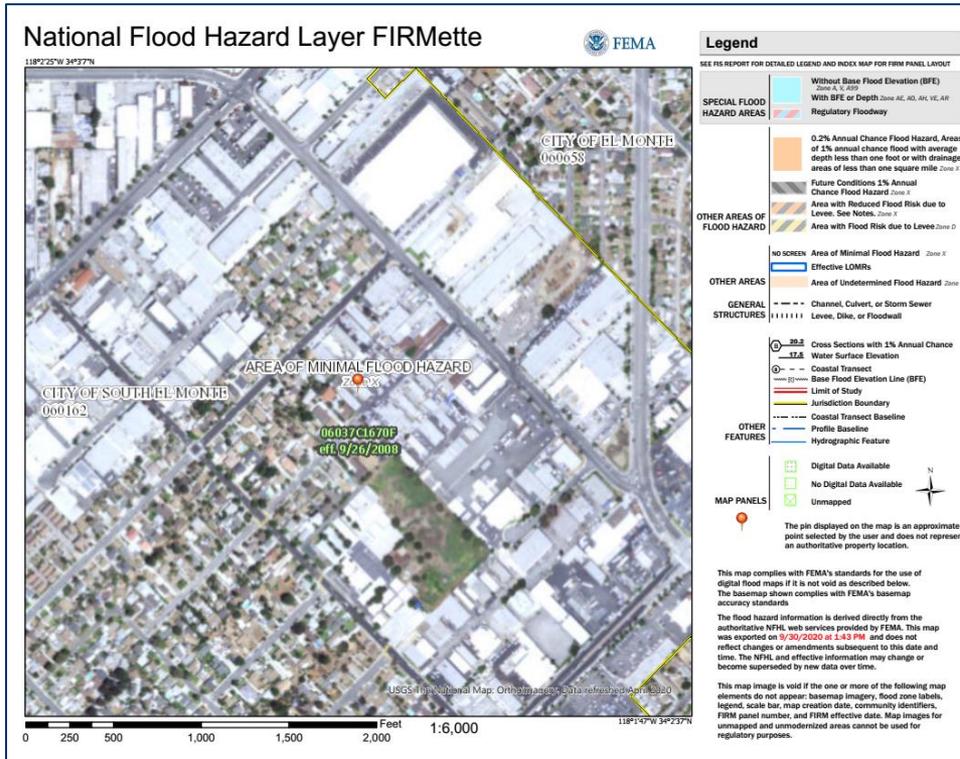
M 7.0 Scenario Earthquake – Whittier-Elsinore

★ Epicenter



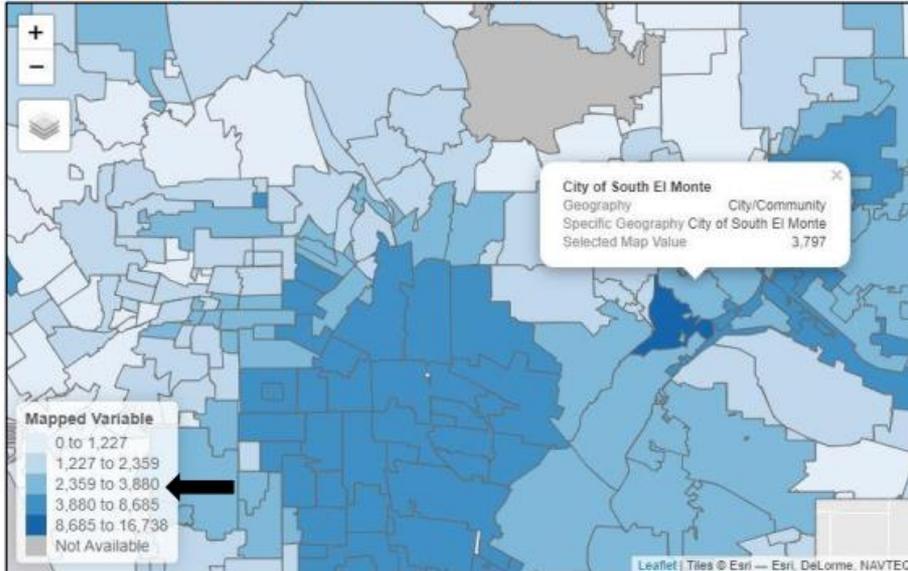
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC. (%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL. (cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Flood Hazard



Epidemic/Pandemic and Vector-Borne

Map: Adjusted Rates for Cases by City/Community, LA County COVID-19 Surveillance Dashboard
(Source: County of Los Angeles Public Health)



Mitigation Actions Matrix

Mitigation Actions Matrix

Following is **Table: Mitigation Actions Matrix** which identifies the existing and future mitigation activities developed by the Planning Team.

Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
Multi-Hazard Action Items													
MH-1 Integrate the goals and action items from the South El Monte Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.	Community Development (CD)	Ongoing	X	X	X	X	X	GF	H	L	L	Y	Revised
MH-2 When feasible, identify and pursue funding opportunities to develop and implement local mitigation activities.	GD	Ongoing											Deleted - duplicate
MH-3 When feasible, identify and pursue funding opportunities to develop and	CD, Community Services (CS), City Manager's Office (CM)	Ongoing						GF	H	L	H	Y	Revised

October 14, 2020 | Hazard Mitigation Plan





Credits

Q&A | ELEMENT A: PLANNING PROCESS | A1c.

Q: Does the plan identify who represented each jurisdiction? (At a minimum, it must identify the jurisdiction represented and the person’s position or title and agency within the jurisdiction.)

(Requirement §201.6(c)(1))

A: See **Hazard Mitigation Planning Team** below.

Hazard Mitigation Planning Team:

Name	Department/Division	Position Title
<i>City of South El Monte</i>		
Rene Salas	City Manager’s Office	Assistant City Manager
Colby Cataldi	Community Development	Director
Daniel Arad	Public Works Department	Public Works Analyst
Jose Figueroa	Public Works Department	Public Works Supervisor
Andres Gonzalez	Senior Services	Senior Services Supervisor
Monica Heredia	Public Works Department	Public Works Analyst
Masami Higa	Finance	Accounting Manager
Ian McAleese	Planning Division	Assistant Planner
Joe Martinez	Code Enforcement Division	Code Enforcement Officer
Jayson Perez	Public Works Department	Recreation Coordinator
Raul Rodriguez	Code Enforcement Division	Code Enforcement Officer

Acknowledgements

City of South El Monte City Council

Gloria Olmos, Mayor
 Gracie Retamoza, Mayor Pro Tem
 Manuel Acosta, Councilmember
 Richard Angel, Councilmember
 Hector Delgado, Councilmember

Point of Contact

To request information or provide comments regarding this mitigation plan, please contact:

Name & Position Title	Mr. Colby Cataldi, Community Development Director
Email	ccataldi@soelmonte.org
Mailing Address	1415 N. Santa Anita Avenue, South El Monte, CA 91733
Telephone Number	626-579-6540 ext. 3218



Consulting Services

Emergency Planning Consultants

- ✓ Principal Planner: Carolyn J. Harshman, CEM, President
- ✓ Planning Assistant: Megan R. Fritzler

Mapping

The maps in this plan were provided by the City of South El Monte, County of Los Angeles, Federal Emergency Management Agency (FEMA), or were acquired from public Internet sources. Care was taken in the creation of the maps contained in this Plan, however they are provided "as is". The City of South El Monte cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these products (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

Mandated Content

In an effort to assist the readers and reviewers of this document, the jurisdiction has inserted "markers" emphasizing mandated content as identified in the Disaster Mitigation Act of 2000 (Public Law – 390). Following is a sample marker:

EXAMPLE

Q&A | ELEMENT A: PLANNING PROCESS | A1a.

Q Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)? (Requirement §201.6(c)(1))

A:



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Part I: PLANNING PROCESS

Introduction

Q&A | ELEMENT A: PLANNING PROCESS | A1b.

Q: Does the plan list the jurisdiction(s) participating in the plan that are seeking approval? (Requirement §201.6(c)(1))

A: See **Introduction** below.

The Hazard Mitigation Plan (Mitigation Plan) was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) requires state and local governments (including special districts and joint powers authorities) to prepare mitigation plans to document their mitigation planning process, and identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the City's emergency management planning programs. This is an update to the City's 2009 Hazard Mitigation Plan.

Planning Approach

The four-step planning approach outlined in the FEMA publication, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies* (FEMA 386-3) was used to develop this plan:

- ✓ **Develop mitigation goals and objectives** - The risk assessment (hazard characteristics, inventory, and findings), along with municipal policy documents, were utilized to develop mitigation goals and objectives.
- ✓ **Identify and prioritize mitigation actions** - Based on the risk assessment, goals and objectives, existing literature/resources, and input from participating entities, mitigation activities were identified for each hazard.
- ✓ **Prepare implementation strategy** - Generally, high priority activities are recommended for implementation first. However, based on organizational needs and goals, project costs, and available funding, some medium or low priority activities may be implemented before some high priority items.
- ✓ **Document mitigation planning process** - The mitigation planning process is documented throughout this plan.

Q&A | ELEMENT A: PLANNING PROCESS | A3

Q: Does the plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))

A: See **Stakeholders** below.

Stakeholders

A Hazard Mitigation Planning Team (Planning Team) consisting of the City of South El Monte staff working Emergency Planning Consultants to create the hazard mitigation plan. **The Planning Team served as the primary stakeholders throughout the planning process.**

As required by DMA 2000, the Planning Team involved "the public". The general public and external agencies were invited to contribute to the mitigation plan during the plan writing phase. The Second Draft Plan was announced and posted on the [redacted] website on [redacted].



External agencies were emailed information about the availability on the [redacted] website of the Second Draft Plan. In addition, the Second Draft Plan was presented to the City's Planning Commission on October 20, 2020. The document of the Commission meeting is in **Attachments: Planning Commission Staff Report and Minutes.**

The general public, external agencies, and the City Planning Commission served as secondary stakeholders with opportunity to contribute to the plan during the Plan Writing Phase of the planning process.

Q&A | ELEMENT C. MITIGATION STRATEGY | C2

Q: Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))

A: See **NFIP Participation** below.

National Flood Insurance Program

NFIP Participation

City of South El Monte participates in the National Flood Insurance Program (NFIP). The FEMA FIRM maps for the project area were last updated September 26, 2008. It's important to note that FEMA flood maps are not entirely accurate. The studies and maps represent flood risk at the point in time when FEMA completed the studies and does not incorporate planning for floodplain changes in the future due to new development. Although FEMA is considering changing that policy, it is optional for local communities. See **Flood Hazards** for additional information on flood hazards impacting the project area.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B4

Q: Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

A: See **Repetitive Loss Properties** below.

Repetitive Loss Properties

According to FEMA resources, none of the properties within City of South El Monte are designated as a Repetitive Loss Property (RLPs).

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood hazard mitigation programs. Unlike a Countywide program, the Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also requires public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one for which two or more claims of \$1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given ten-year period.



Planning Process

Throughout the project, the Planning Team served as the primary stakeholders while also making a concerted effort to gather information from the general public, external agencies (joint powers authority jurisdictions, utility providers and special districts). In addition, the Planning Team solicited information from agencies and people with specific knowledge of hazards and past historical events, as well as building codes and facilities maintenance planning. The hazard mitigation strategies contained in this plan were developed through an extensive planning process involving City of South El Monte staff, general public, and external agencies.

Following review and input by the Planning Team to the First Draft Plan, next (still during the Plan Writing Phase), the Second Draft Plan was shared with the general public and external agencies (adjoining jurisdictions, utility providers, special districts, etc.). The general public and external agencies served as the secondary stakeholders. Next, the comments gathered from the secondary stakeholders were incorporated into a Third Draft Plan which was submitted to Cal OES and FEMA along with a request for a determination of “approval pending adoption”.

Next, the Planning Team completed amendments to the Plan to reflect mandated input by Cal OES and FEMA. The Final Draft Plan was then posted in advance of the City Council public meeting. Any comments gathered were included in the staff report to the City Council. Following adoption, proof of adoption was forwarded to FEMA with a request for approval. The FEMA Letter of Approval was included in the Final Plan. The planning process described above is portrayed below in a timeline:

Q&A | ELEMENT A: PLANNING PROCESS | A1a.

Q: Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)? (Requirement §201.6(c)(1))

A: See **Plan Methodology and Planning Phases Progression** below.

Q&A | ELEMENT A: PLANNING PROCESS | A3

Q: Does the plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))

A: See **Planning Phases Progression** below.



Figure: Planning Phases Progression

PLANNING PHASES PROGRESSION				
Plan Writing Phase (First, Second, Third Draft Plan)	Plan Review Phase (Fourth Draft Plan)	Plan Adoption Phase (Final Draft Plan)	Plan Approval Phase (Final Plan)	Plan Implementation Phase
<ul style="list-style-type: none"> • Planning Team input – research, meetings, writing, review of First Draft Plan • Incorporate input from the Planning Team into Second Draft Plan • Present Second Draft Plan to City’s Planning Commission • Incorporate input into the Third Draft Plan • Invite public and external agencies via email and web posting to review, comment, and contribute to the Third Draft Plan 	<ul style="list-style-type: none"> • Incorporate input from the community outreach into Fourth Draft Plan • Send to Cal OES and FEMA for Approval Pending Adoption • Address any mandated revisions identified by Cal OES and FEMA into Final Draft Plan 	<ul style="list-style-type: none"> • Post public notice of City Council meeting along with the Final Draft Plan • Final Draft Plan distributed to City Council in advance of meeting • Present Final Draft Plan to the City Council for adoption • City Council adopt Plan 	<ul style="list-style-type: none"> • Submit Proof of Adoption to FEMA with request for final approval • Receive FEMA Letter of Approval • Incorporate FEMA approval and City Council resolution into the Final Plan 	<ul style="list-style-type: none"> • Conduct quarterly Planning Team meetings • Integrate mitigation action items into budget and other funding and strategic documents



Q&A ELEMENT E: PLAN ADOPTION E1
<p>Q: Does the plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))</p> <p>A: See Plan Adoption Process below.</p>

Plan Adoption Process

Adoption of the plan by the local governing body demonstrates the City’s commitment to meeting mitigation goals and objectives. Governing body approval legitimizes the plan and authorizes responsible agencies to execute their responsibilities.

The Third Draft Plan was submitted to Cal OES and FEMA for review and approval. FEMA issued an Approval Pending Adoption on [redacted] requiring the adoption of the Plan by the City Council. The adoption resolution was submitted to FEMA along with a request for a FEMA Letter of Approval.

In preparation for the public meeting with the City Council, the Planning Team prepared a Staff Report including an overview of the Planning Process, Risk Assessment, Mitigation Goals, and Mitigation Actions. The staff presentation concluded with a summary of the input received during



the public review of the document. The meeting participants were encouraged to present their views and make suggestions on possible mitigation actions.

The City Council heard the item on [REDACTED]. The Board voted to adopt the hazard mitigation plan. The Resolution of adoption is in the **Attachment: Resolution**.

Plan Approval

FEMA approved the Plan on [REDACTED]. A copy of the FEMA Letter of Approval is in the **Attachment: FEMA Letter of Approval**.

Q&A | ELEMENT A: PLANNING PROCESS | A1a.

Q: Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)? (Requirement §201.6(c)(1))

A: See **Planning Team Involvement** below.

Planning Team Involvement

The Planning Team, with assistance from Emergency Planning Consultants, identified and profiled hazards; determined hazard rankings; estimated potential exposure or losses; evaluated development trends and specific risks; and developed mitigation goals and action items.

The Planning Team consisted of representatives from different City departments with a role in hazard mitigation processes. The Planning Team served as the primary stakeholders throughout the planning process. The general public, external agencies, and City's Planning Commission served as secondary stakeholders in the planning process. The Planning Team was responsible for the following tasks:

- ✓ Develop planning goals
- ✓ Prepare timeline
- ✓ Ensure plan meets DMA 2000 requirements
- ✓ Organize and solicit involvement of public and external agencies
- ✓ Analyze existing data and reports
- ✓ Review hazard information and HAZUS loss projection estimates
- ✓ Examine Hazard-Specific Critical Assets Maps
- ✓ Develop Mitigation Action Items
- ✓ Participate in meeting of the City's Planning Commission
- ✓ Participate in Planning Team meetings and City Council public meeting
- ✓ Share existing resources including maps and data
- ✓ Research strategic documents identifying future construction and maintenance projects
- ✓ Examine known vulnerabilities to critical assets



Table: Planning Team Level of Participation

Name	Research, Data Collection and Plan Writing	Planning Team Meeting 1: September 15, 2020	Planning Team Meeting 2: September 23, 2020	Planning Team Meeting 3: October 1, 2020	Planning Team Meeting 4: October 14, 2020	Planning Team Comment on First Draft Plan	Distribute Second Draft Plan to General Public and External Agencies	Present Second Draft Plan to City Planning Commission	Review Input from Public, and External Agencies of the Second Draft Plan	Submit Third Draft Plan to Cal OES/FEMA for Approval Pending Adoption	Post Final Draft Plan in Advance of City Council Meeting	Present Final Draft Plan to City Council at Public Meeting for Plan Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA Approval into Final Plan
City of South El Monte														
Rene Salas	X	X	X											
Colby Cataldi, Chair				X	X									
Daniel Arad	X	X	X	X	X									
Ian McAleese	X	X	X	X	X									
Jose Figueroa	X		X	X	X									
Monica Heredia	X													
Joe Martinez	X	X	X		X									
Raul Rodriguez	X		X											
Andres Gonzalez	X		X											
Masami Higa	X		X	X	X									
Jayson Perez	X	X	X	X	X									
Emergency Planning Consultants														
Carolyn Harshman	X	X	X	X	X									
Megan Fritzier	X													

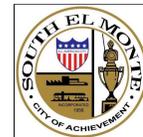


Table: Planning Team Timeline

Task	August 2020	September	October	November	December	January 2021	February	March	April	May
Hazard Research and Prepare First Draft Plan	X	X	X	X						
Planning Team Meeting #1 Kick-Off – HMP Overview and Initial Hazard Briefing		X								
Planning Team Meeting #2 HAZUS and Mitigation Actions Matrix Update		X								
Planning Team Meeting #3 Continue on Mitigation Actions Matrix Update			X							
Distribute First Draft Plan to Planning Team			X							
Planning Team Meeting #4 Review First Draft Plan			X							
Prepare Second Draft Plan			X							
Distribute Second Draft Plan to General Public, External Agencies			X							
Present to City Planning Commission			X							
Prepare Third Draft Plan (including input gathered from general public, external agencies, and City Planning Commission) for Submission to Cal OES and FEMA				X						
Work with Cal OES and FEMA on DMA 2000-Mandated Revisions to the Plan				X	X	X	X	X	X	
Receive FEMA Approval Pending Adoption									X	
Post and Conduct City Council Meeting to Adopt the Final Draft Plan. Submit proof of adoption to FEMA									X	
Receive FEMA Final Approval										X
Incorporate FEMA Final Approval into Final Plan										X

Q&A | ELEMENT A: PLANNING PROCESS | A2a.

Q: Does the plan document an opportunity for neighboring communities, local, and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interested parties to be involved in the planning process? (Requirement §201.6(b)(2))

A: See **Secondary Stakeholder Involvement** below.

Q&A | ELEMENT A: PLANNING PROCESS | A2b.

Q: Does the plan identify how the stakeholders were invited to participate in the process? (Requirement §201.6(b)(2))

A: See **Secondary Stakeholder Involvement** below.

Secondary Stakeholder Involvement

In addition to the Planning Team, the secondary stakeholders also provided information, expertise, and other resources during plan writing phase. The secondary stakeholders included the City staff, general public, external agencies, and City Planning Commission. All gathered input was incorporated into the Third Draft Plan prior to distribution to Cal OES and FEMA. For



a specific accounting of the date, source, information gathered, and use of input during the Plan Writing Phase, please see **Attachments: Secondary Stakeholder Input**.

In advance of the City Council public meeting, City staff (via Newsletter), general public (via public noticing) and external agencies (via email invitation) were informed of the Final Draft Plan and encouraged to participate in the public meeting. Any comments gathered were noted in the Planning Team Staff Report and added to the Final Draft Plan.

Q&A | ELEMENT C. MITIGATION STRATEGY | C1a.

Q: Does the plan document each jurisdiction's existing authorities, policies, programs and resources? (Requirement §201.6(c)(3))

A: See **Capability Assessment – Existing Processes and Programs** below.

Capability Assessment – Existing Processes and Programs

The City will incorporate mitigation planning as an integral component of daily operations. This will be accomplished by the Planning Team working with their respective departments to integrate mitigation strategies into the planning documents and City operational guidelines. FEMA identifies four types of capabilities:

- ✓ Planning and Regulatory
- ✓ Administrative and Technical
- ✓ Financial
- ✓ Education and Outreach

The table below includes a broad range of capabilities within the City to successfully accomplish mitigation.



Table: Capability Assessment - Existing Processes and Programs
 (Source: South El Monte Planning Team)

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning & Regulatory	Administrative & Technical	Financial	Education & Outreach		
City of South El Monte Departments/Divisions					
	X	X	X	City Manager's Office	<p>Serving under the direction of the City Council, the City Manager is responsible for making recommendations to the council concerning programs & policies and developing methods to ensure the effective and efficient operation of city services.</p> <p>The City Manager's Office coordinates & administers the implementation of policies, procedures and ordinances that will provide for the sustainable, managed growth of the city. The City Manager plays a pivotal role in establishing priorities and controls on spending. Also, the Office maintains several methods of communicating with the citizens and business owners.</p>
X	X	X	X	Community Development	<p>The Community Development Department prepares, updates and administers the General Plan; provides information and assistance to the public with regards to the City's development review process; analyzes land use and development proposals from an environmental, zoning, land use, and design standpoint and provides recommendations to the Planning Commission and the City Council. The department works regularly with CDBG, HUD, and other funding mechanisms that could be helpful in financing mitigation action items. The department is tasked with several mitigation action items in the Plan.</p>
	X		X	Community Services	<p>The Community Services Department serves the community by providing a variety of quality services, programs, parks and facilities, recreational activities, and special events, which promote healthy lifestyles that overall enrich the quality of life in South El Monte. An excellent medium for community outreach, the department maintains bulletin boards, a newsletter, and eblast capabilities to inform the public.</p>
X	X	X	X	Finance	<p>The Finance Department manages and maintains the City's financial records in conformity with generally accepted accounting principles and in compliance with State and Federal laws. The department closely follows announcements for grants and other funding opportunities. The department is responsible for preparing the Annual Budget which could be an effective way to highlight line items tied to the Plan.</p>
	X			Human Resources	<p>The City of South El Monte is committed to customer satisfaction and timely responses; the Human Resources Division's goal is to hire employees to achieve this standard.</p>



Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning & Regulatory	Administrative & Technical	Financial	Education & Outreach		
X	X	X	X	Public Works	The Public Works Department is responsible for the management and operation of all public streets, sidewalks, street lighting, sewers, laterals, storm drains and reviews public works contracts to ensure that work conforms to plans-specifications and City standards. The department is assigned several of the mitigation action items in the Plan.
City of South El Monte Plans and Programs					
X	X	X	X	General Plan	The General Plan is the "Master Plan" for future growth and development in the City. It envisions a future that the City wishes to achieve that bears an improved general welfare for City residents, businesses and property owners. To achieve this future, the General Plan sets goals and policies which guide all City actions. One of the mandated elements to the General Plan is the Public Safety Element which includes information on the hazards and capabilities within the City. Future updates to the Public Safety Element need to reflect coordination with the Hazard Mitigation Plan. With the exception of the Housing Element, the General Plan was last updated in 2000.
External Agencies					
X	X		X	County of Los Angeles	Guidance and regulations from several departments within the County of Los Angeles government influence the actions of the City of South El Monte. Specifically, the County's recently updated General Plan provides information on hazard events and up-to-date mapping of hazards within the region. Also, the County's All-Hazard Mitigation Plan is a valuable resource of mitigation action items and hazard information. Also, many of the County's departments maintain robust capabilities for education and outreach through a variety of venues and mediums.
				Greater Los Angeles County Vector Control District	The Greater Los Angeles County Vector Control District (GLACVCD) provides vector control services to the City of South El Monte.
X	X		X	Southeast Area Animal Control Authority	The Southeast Area Animal Control Authority (SEAACA) provides animal care and control services to the City.

Q&A | ELEMENT A: PLANNING PROCESS | A4

Q: Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))

A: See **Use of Existing Data** below.



Use of Existing Data

The Planning Team gathered and reviewed existing data and plans during plan writing and specifically noted as “sources”. Numerous electronic and hard copy documents were used to support the planning process:

City of South El Monte Website

<https://www.cityofsouthelmonte.org/>

Applicable Incorporation: Departments, General Plan.

Los Angeles County General Plan (2015)

http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan.pdf

Applicable Incorporation: Climate Information, Maps.

County of Los Angeles All-Hazards Mitigation Plan (2019)

http://file.lacounty.gov/SDSInter/lac/1062614_AHMPPublicDraft_Oct1.pdf

Applicable Incorporation: Information about hazards in the County contributed to the hazard-specific sections in the City’s Hazard Mitigation Plan.

State of California Hazard Mitigation Plan (2018)

https://www.caloes.ca.gov/HazardMitigationSite/Documents/0022018%20SHMP_FINAL_ENTIRE%20PLAN.pdf

Applicable Incorporation: Used to identify hazards posing greatest threat to State.

HAZUS Maps and Reports

Created by Emergency Planning Consultants

Applicable Incorporation: Numerous HAZUS maps and reports have been included for Earthquake and Flooding to determine specific risks and impacts to the City.

FEMA “How To” Mitigation Series (386-1 to 386-9)

www.fema.gov/media

Applicable Incorporation: Mitigation Measures Categories and 4-Step Planning Process are quoted in the Executive Summary.

National Flood Insurance Program

www.fema.gov/national-flood-insurance-program

Applicable Incorporation: Used to confirm there are no repetitive loss properties within the City.

Local Flood Insurance Rate Maps

<https://msc.fema.gov/portal/home>

Applicable Incorporation: Provided by FEMA and included in Flood Hazard section.

California Department of Conservation

www.conservation.ca.gov/cgs

Applicable Incorporation: Seismic hazards mapping.

U.S. Geological Survey (USGS)

www.usgs.gov

Applicable Incorporation: Earthquake records and statistics.



Using HAZUS for Mitigation Planning (2018)

https://www.fema.gov/media-library-data/1540479624999-ab1eca852448e271f0de82cf2031a01b/Using_Hazus_in_Mitigation_Planning_20180820_Final_508_Compliant.pdf
Applicable Incorporation: HAZUS Information.

California's Fourth Climate Change Assessment: Los Angeles Region Report (2019)

<https://www.energy.ca.gov/sites/default/files/2019-07/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles.pdf>
Applicable Incorporation: Climate Information.

NOAA National Centers for Environmental Information, Climate at a Glance (2019)

<https://www.ncdc.noaa.gov/cag/county/time-series>
Applicable Incorporation: Data Image.



Part II: RISK ASSESSMENT

Community Profile

Q&A | ELEMENT B3:

Q: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(b)(3))

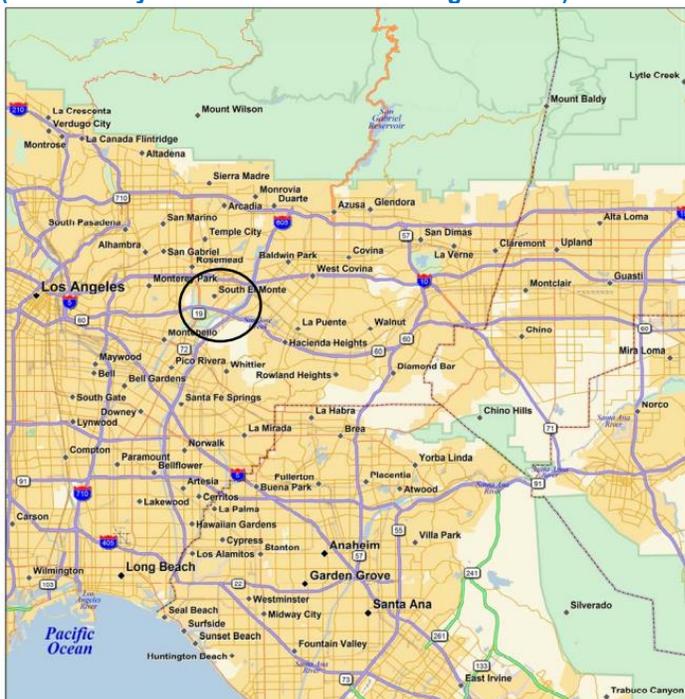
A: See **Location and the Environment** below.

Location and the Environment

According to South El Monte's website, "The City of Achievement" is a vibrant and thriving community, located in the heart of the San Gabriel Valley, just minutes from downtown Los Angeles. South El Monte was incorporated into a city in 1958 with a population of 3,900 and is now home to more than 20,000 residents with a daytime population of over 44,000, as workers from various business industries stream into the city limits, every morning. The land uses within its 2.8 square are: 54% industrial, 26% residential, 6% retail, 3% office/commercial, 6% other amenities.

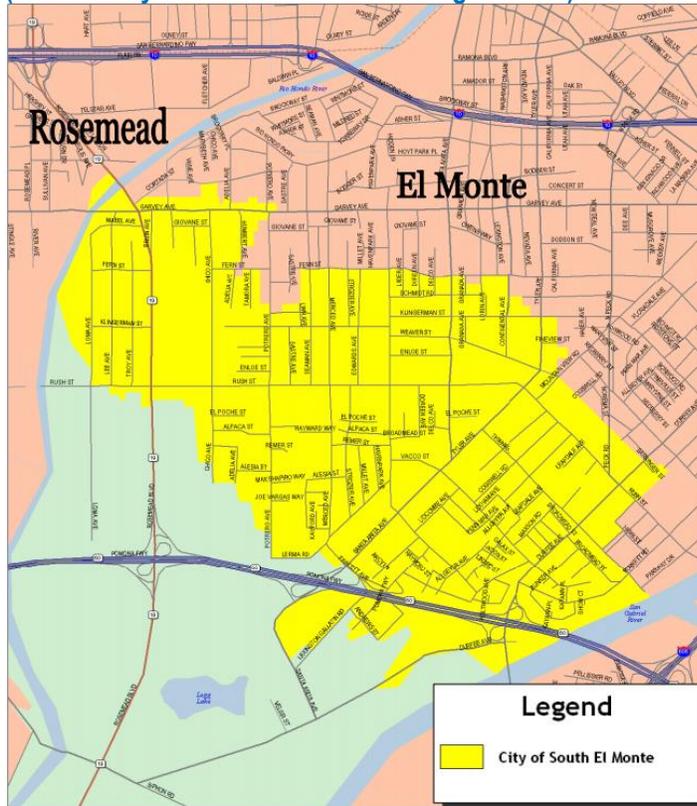
In just six decades, the South El Monte has matured into a viable commercial and industrial base, with over 2,400 businesses due the City having a diverse land use pattern and excellent freeway accessibility to the 10, 60, and 605 freeways which provide ready access to points throughout Southern California. These factors contribute to the desirability of South El Monte as a good location for development.

Map: Regional Perspective – City of South El Monte
(Source: City of South El Monte Housing Element)





Map: Local Perspective - City of South El Monte
(Source: City of South El Monte Housing Element)

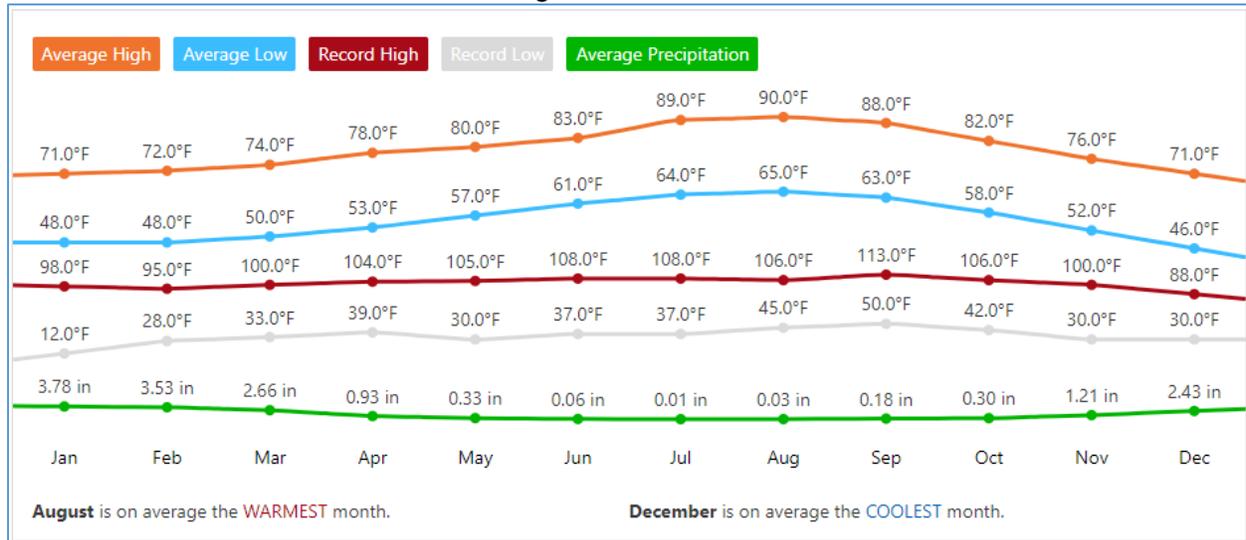




Climate

Table: City of South El Monte Weather Averages
(Source: Weather Channel)

Data from The Weather Channel indicates the City experiences temperatures ranging from average highs of 90 degrees in summer to average lows of 46 degrees in winter. Typically, December is the coolest month, while August is the warmest.



Much of Los Angeles County is part of a biodiversity hotspot, designating the area as unique with a fragile ecosystem of endemic plants and animals. According to National Geographic, biodiversity hotspots make up less than 3 percent of Earth’s land surface and refer to regions that are both rich with life and at high risk for destruction.

As discussed in the Los Angeles County General Plan 2015, the region is a land of beaches, valleys, mountains, and deserts. Overall, the climate can be characterized as “Mediterranean,” with hot, dry summers and mild, wet winters. The diversity of the topography results in localized climate zones that are roughly divided by the Transverse Ranges (Santa Monica Mountains and San Gabriel Mountains). The climate zones are closely tied to geologic landforms and vary based on elevation changes and distance from the ocean. These climate zones can be grouped into three broad categories:

Coastal Plain: The coastal plain includes the beaches, valleys, and canyons that occupy the Los Angeles Basin and terminate at the Transverse Ranges. During the dry season, the determining factor in coastal plain weather is the proximity to the Pacific Ocean and the resultant marine layer. The marine layer acts as a buffer, which is evidenced by relatively cool and constant temperatures, low clouds, fog, and haze. The marine layer settles over the Basin during the evening and early morning before being burned off by sunshine midday. Due to the dominance and stability of the high-pressure area in the Basin, precipitation is rare between May and November.

Mountain: Climates in the mountains are characterized by lower average temperatures and heavier rainfall than in the coastal plain. The Transverse Ranges are further removed



from the climatic influences of marine wind patterns and experience the additional influence of altitude.

High Desert: The high desert includes the Antelope Valley, which is the westernmost portion of the Mojave Desert. The high desert is located more than 50 miles inland and is removed from marine influences and experiences a more extreme type of climate. The Transverse Ranges act as a barrier to rain bearing clouds moving inland. In addition, the Antelope Valley is home to several wildlife and wildflower sanctuaries that thrive in the often-inhospitable climate found in the high desert.





Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information regarding: the location of hazards; the value of existing land and property in hazard locations; and an analysis of risk to life, property, and the environment that may result from natural hazard events. Specifically, the five levels of a risk assessment are as follows: Hazard Identification, Profiling Hazard Events, Vulnerability Assessment/Inventory of Existing Assets, Risk Analysis, and Assessing Vulnerability/Analyzing Development Trends.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1a.

Q: Does the plan include a general **description** of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Hazard Identification** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1b.

Q: Does the plan provide rationale for the omission of any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement §201.6(c)(2)(i))

A: See **Hazard identification** below.

1) Hazard Identification

This section is the description of the geographic extent, potential intensity, and the probability of occurrence of a given hazard. Maps are used in this plan to display hazard identification data. **The City utilized the categorization of hazards as identified in California’s State Hazard Mitigation Plan, including: Earthquakes, Floods, Levee Failures, Wildfires, Landslides and Earth Movements, Tsunami, Climate-Related Hazards, Volcanoes, and Other Hazards.**

Next, the Planning Team reviewed existing documents to determine which of these hazards posed the most significant threat to the City and its ability to deliver services. In other words, which hazard would likely result in a local declaration of emergency.



The geographic extent of each of the identified hazards was identified by the Planning Team utilizing maps and data contained in the Los Angeles County General Plan 2015. In addition, numerous internet resources and the County of Los Angeles All-Hazards Mitigation Plan (2019) served as valuable resources. Utilizing the Calculated Priority Risk Index (CPRI) ranking technique, the Planning Team concluded the hazards posing a significant threat against the City include: Earthquake, Flood, and Epidemic/Pandemic and Vector-Borne Diseases.

The hazard ranking system is described in **Table: Calculated Priority Risk Index**, while the actual ranking is shown in **Table: Calculated Priority Risk Index Ranking for the City**.



Table: Calculated Priority Risk Index
 (Source: Federal Emergency Management Agency)

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 1 in 1,000 years.	1	45%
	Possibly	Rare occurrences. Annual probability of between 1 in 100 years and 1 in 1,000 years.	2	
	Likely	Occasional occurrences with at least 2 or more documented historic events. Annual probability of between 1 in 10 years and 1 in 100 years.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 1 every year.	4	
Magnitude/ Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible loss of quality of life. Shut down of critical public facilities for less than 24 hours.	1	30%
	Limited	Slight property damage (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability, and there are no deaths. Moderate loss of quality of life. Shut down of critical public facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damage (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least 1 death. Shut down of critical public facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damage (greater than 50% of critical and non-critical facilities and infrastructure). Injuries and illnesses result in permanent disability and multiple deaths. Shut down of critical public facilities for more than 1 month.	4	
Warning Time	> 24 hours	Population will receive greater than 24 hours of warning.	1	15%
	12–24 hours	Population will receive between 12-24 hours of warning.	2	
	6-12 hours	Population will receive between 6-12 hours of warning.	3	
	< 6 hours	Population will receive less than 6 hours of warning.	4	
Duration	< 6 hours	Disaster event will last less than 6 hours	1	10%
	< 24 hours	Disaster event will last less than 6-24 hours	2	
	< 1 week	Disaster event will last between 24 hours and 1 week.	3	
	> 1 week	Disaster event will last more than 1 week	4	



Table: Calculated Priority Risk Index Ranking for the City of South El Monte
 (Source: Emergency Planning Consultants)

Hazard	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Total
Earthquake – San Andreas M7.8	3	1.35	4	1.20	4	0.60	1	0.10	3.25
Earthquake – Puente Hills M7.1	3	1.35	4	1.20	4	0.60	1	0.10	3.25
Earthquake – Whittier M7.0	3	1.35	4	1.20	4	0.60	1	0.10	3.25
Earthquake – Sierra Madre M7.2	3	1.35	4	1.20	4	0.60	1	0.10	3.25
Urban Flooding	4	1.80	2	0.60	3	0.45	1	0.10	2.95
Epidemic/Pandemic and Vector Borne	3	1.35	3	0.90	1	0.15	4	0.40	2.80
Dam Inundation	2	0.90	3	0.90	4	0.60	2	0.20	2.60

2) Profiling Hazard Events

This process describes the causes and characteristics of each hazard and what part of the City facilities, infrastructure, and environment may be vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in the City Specific Hazard Analysis. **Table: Vulnerability: Location, Extent, and Probability for the City** indicates a generalized perspective of the community’s vulnerability of the various hazards according to extent (or degree), location, and probability.

Q&A ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT B1c.
Q: Does the plan include a description of the location for all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See Table: Vulnerability: Location, Extent, and Probability for the City of South El Monte below.
Q&A ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT B1d.
Q: Does the plan include a description of the extent for all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See Table: Vulnerability: Location, Extent, and Probability for the City of South El Monte below.
Q&A ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT B2a.
Q: Does the plan include information on previous occurrences of hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See Table: Vulnerability: Location, Extent, and Probability for the City of South El Monte below.
Q&A ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT B2b.
Q: Does the plan include information on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See Table: Vulnerability: Location, Extent, and Probability for the City of South El Monte below.



Table: Vulnerability: Location, Extent, and Probability for the City of South El Monte

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Previous Occurrences
Earthquake	Citywide	The Southern California Earthquake Center (SCEC) in 2007 concluded that there is a 99.7 % probability that an earthquake of M6.7 or greater will hit California within 30 years. Earthquake would most likely originate from the San Andreas fault.	Likely	March 28, 2014: La Habra M5.1. No injuries or damage. September 19, 2020: South El Monte M4.5, no reported injuries or damage.
Urban Flood	Localized areas	Depending on location, the water ponds several inches which impacts automobile and foot traffic.	Likely	South El Monte - New Temple Park Cogswell, north side of Central
Dam Inundation	Covers entire City with 2-foot and 7-foot maximum water depth in event of dam failure	Flooding threat from Dam Inundation resulting from catastrophic failure of upstream dam	Possibly	No historical occurrences
Epidemic/Pandemic and Vector-Borne	Citywide	Quarantines, Shelter-in-Place Orders, Closed for Business and Functions, Curfews.	Likely	COVID-19, March 2020-Present
* Probability is defined as: Unlikely = 1:1,000 years, Possibly = 1:100-1:1,000 years, Likely = 1:10-1:100 years, Highly Likely = 1:1 year				
1 Uniform California Earthquake Rupture Forecast				

HAZUS-MH

The HAZUS maps in the Mitigation Plan were generated by Emergency Planning Consultants using FEMA’s Hazards United States – Multi Hazard (HAZUS-MH) software program. Please see **Attachments – HAZUS** for complete reports. Once the location and size of a hypothetical earthquake are identified, HAZUS-MH estimates the intensity of the ground shaking, the number of buildings damaged, the number of casualties, the amount of damage to transportation systems and utilities, the number of people displaced from their homes, and the estimated cost of repair and clean up. It’s important to note that the “project area” is based on Census Tracts not jurisdictional boundaries.

As per FEMA’s HAZUS Guidebook, HAZUS is a GIS-based software that can be used to estimate potential damage, economic loss, and social impacts from earthquake, flood, tsunami and hurricane wind hazards. The HAZUS software includes nationwide general GIS datasets, and a model for the four natural disasters below. The model results can support the risk assessment piece of mitigation planning.

Graphic: Model Results to Support Risk Assessment for Mitigation Planning
 (Source: Using HAZUS for Mitigation Planning, Federal Emergency Management Agency, 2018)

<p>Earthquake model</p> 	<p>Estimates damages and losses to buildings, essential facilities, transportation, and utility lifelines from a single scenario or probabilistic earthquake analysis. There are also tools that allow the user to integrate earthquake hazard data generated outside of Hazus into the earthquake model. This model estimates debris generation, shelter requirements, casualties, and fire following an earthquake disaster.</p>
<p>Flood model</p> 	<p>Generates flood hazard data using nationwide hydrological datasets. There are also tools that allow the user to integrate flood hazard data generated outside of Hazus software into the flood model. This model estimates the expected levels of damage to infrastructure and buildings. Debris generation and shelter requirements, as well as agricultural losses, can be calculated with this model.</p>
<p>Tsunami model</p> 	<p>Can produce analyses that have several pre-tsunami and/or post-tsunami applications. Use of the methodology will generate an estimate of the consequences to a county or region of a "scenario tsunami," i.e., a tsunami with a specified inundation depth, velocity, and location. The resulting "loss estimate" generally will describe the scale and extent of damage and disruption that may result from the scenario tsunami.</p>
<p>Hurricane wind model</p> 	<p>Can create the wind hazard data from a historical or real-time event, probabilistic event, or from a user-defined scenario. Estimates of potential damage and economic loss to buildings can then be calculated. The storm surge analysis combines the wind and coastal flood model to simulate storm surge for historical, and manual hurricanes. The model combines the wind and flood losses.</p>

HAZUS is packaged with datasets that include building inventories and infrastructure for the entire United States. Because HAZUS is currently built on GIS technology, the inventory and infrastructure datasets can be mapped and intersected with the hazard information created from the four models.

Following the intersection, HAZUS determines the effects of wind, ground shaking, and water depths on buildings and infrastructure to calculate losses and damages. The outputs and estimates can be used in hazard mitigation planning, emergency response, and planning for recovery and reconstruction.

Losses estimated in HAZUS are based on the accuracy of input data. Basic analysis can be developed using the default data and parameter data provided within HAZUS. Users can conduct more advanced analysis using more accurate data that is specific to the region, hazard, population, etc. User-supplied data improves the accuracy of inventories and/or parameters.

Advanced-level analyses may also incorporate data from third-party studies. The user must determine the appropriate level of analysis to meet the user's needs and resources. HAZUS analysis can be performed at three different levels:

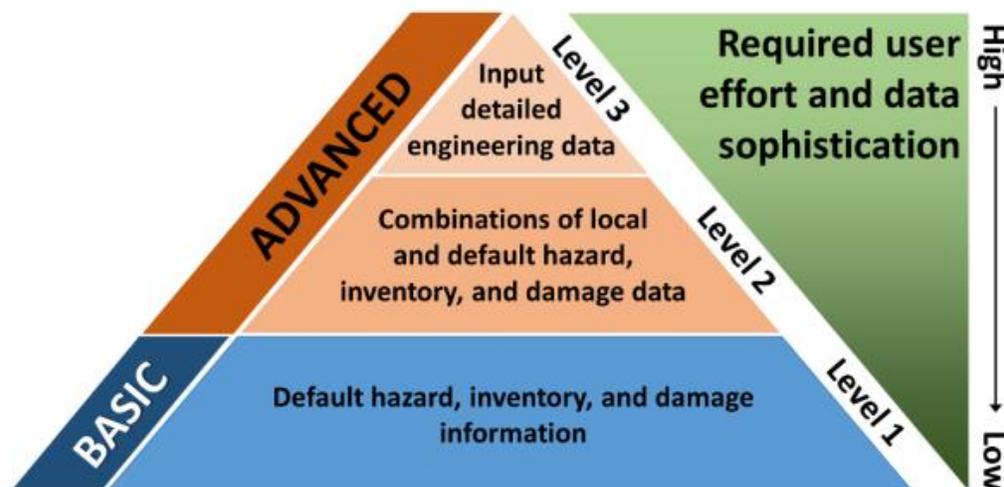


- A Level 1 basic analysis can be performed simply using the default data provided. This level of analysis is very coarse, and because the results will be subject to a much higher level of uncertainty, this should serve primarily as a baseline for further study. The user will still be able to produce basic maps and results. Limited additional data will be required to complete the flood analysis. Site specific input data produces more accuracy in vulnerability identification and loss estimation amounts. If the data is available, it is highly recommended that a user integrate site specific data to reduce uncertainty associated with the results of default data. Using a user defined depth grid, in the flood model, against default state data is classified as a level 1 analysis and is the recommendation of HAZUS Program.
- A Level 2 advanced analysis increases the accuracy and precision of an analysis by incorporating user-supplied data relevant to a given hazard. While the data included with the HAZUS software can be utilized to run a basic level one analysis, level two inputs are supplied by local sources and contain a higher level of detail. This can include datasets that model the hazards in more detail, or datasets that increase the accuracy of the inventory information. Incorporating more detailed data will improve the quality of the results. Level 2 is broadly defined as the incorporation of user-defined hazard and updated general building stock (GBS) or site-specific data. *Level 2 HAZUS maps and reports were prepared by Emergency Planning Consultants for the Mitigation Plan.*
- A Level 3 advanced analysis achieves the highest degree of precision and involves modifying or substituting the model parameters and/or equations, relevant to a given hazard. Users can modify inputs depending on the time and resources available. Keeping track of the data used is suggested so that any relationships between input and results is documented. It is usually done by advanced users experienced with both the hazard and the HAZUS software.

FEMA's Natural Hazard Risk Assessment Program (NHRAP) encourages users to conduct Level 2 or 3 analyses to improve the accuracy of results and recommends the use of user defined data (e.g., depth grids for all flood analysis) for mitigation planning.

Graphic: HAZUS Analysis Levels

(Source: Using HAZUS for Mitigation Planning, Federal Emergency Management Agency, 2018)





HAZUS creates credible estimates for losses and damages; datasets created on the local level typically provide greater detail than the datasets that are packaged with HAZUS (Level 1). Incorporating local datasets into the analysis will improve the results.

HAZUS Outputs

The user plays a major role in selecting the scope and nature of the output of a HAZUS analysis. A variety of maps can be generated for visualizing the extent of the losses. Numerical results may be examined at the level of the census block or tract or may be aggregated by county or region. There are three main categories of HAZUS outputs: direct physical damage, induced damage, and direct losses. Direct physical damage includes general building stock (GBS), essential facilities, high potential loss facilities, transportation systems, utility systems, and user defined facilities. Induced damage includes building debris, tree debris generation and fire following disaster occurrence. Direct losses include losses for buildings, contents, inventory, income, crop damage, vehicle loss, injuries, casualties, sheltering needs and displaced households.

3) Vulnerability Assessment/Inventory of Existing Assets

A Vulnerability Assessment in its simplest form is a simultaneous look at the geographical location of hazards and an inventory of the underlying land uses (populations, structures, etc.). Facilities that provide critical and essential services following a major emergency are of particular concern because these locations house staff and equipment necessary to provide important public safety, emergency response, and/or disaster recovery functions.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3b.

Q: Is there a description of each identified hazard's overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Critical Facilities** below.

Critical Facilities

FEMA separates critical buildings and facilities into the five categories shown below based on their loss potential. All of the following elements are considered critical facilities:

Essential Facilities are essential to the health and welfare of the whole population and are especially important following hazard events. Essential facilities include hospitals and other medical facilities, police and fire stations, emergency operations centers and evacuation shelters, and schools.

Transportation Systems include airways – airports, heliports; highways – bridges, tunnels, roadbeds, overpasses, transfer centers; railways – trackage, tunnels, bridges, rail yards, depots; and waterways – canals, locks, seaports, ferries, harbors, drydocks, piers.

Lifeline Utility Systems such as potable water, wastewater, oil, natural gas, electric power and communication systems.



High Potential Loss Facilities are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.

Hazardous Material Facilities include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Table: Critical Facilities Vulnerable to Hazards below illustrates the hazards with potential to impact critical facilities owned by or providing services to the City.

Table: Critical Facilities Vulnerable to Hazards
(Source: Emergency Planning Consultants)

City of South El Monte Critical Assets	Earthquake	Urban Flood	Dam Inundation	Epidemic/Pandemic and Vector-Borne
Community Center 1530 Central Avenue, South El Monte	X		X	X
Mary Van Dyke Park 1819 Central Avenue, South El Monte	X		X	X
Mini Center 1824 Central Avenue, South El Monte	X		X	X
New Temple Park 1450 Lidcombe Avenue, South El Monte	X	X	X	X
Senior Center 1556 Central Avenue, South El Monte	X		X	X
Skate Park 1530 Central Avenue, South El Monte	X		X	X
South El Monte Aquatic Center 1500 Central Avenue, South El Monte	X		X	X
City Hall 1415 Santa Anita Avenue, South El Monte	X		X	X
Catch Basin Rush, Loma, Lea, Troy	X	X	X	X
Catch Basin Rush, Potrero	X	X	X	X
Catch Basin Rush, Chico	X	X	X	X

The hazard assessment of the City’s Critical Assets reveals a universal vulnerability to the impacts of earthquakes, urban flooding, and epidemics/pandemics and vector-borne diseases. For many years, the City has been proactive in fortifying its buildings and facilities against these hazards. The Mitigation Actions Matrix (located in Mitigation Strategies) identifies several actions that can be taken by City departments to further minimize the impacts associated with these hazards. This assessment emphasizes the importance of conducting a site by site review. Knowing a particular location is vulnerable to certain hazards greatly increases the likelihood of proactive measures, alerting, and well informed emergency response.

Earthquake Hazards

Hazard Definition

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. The photo to the right is of a residential complex in Northridge that experienced severe damage from the magnitude 6.7 earthquake on January 17, 1994.

Photo: Soft Story Building Collapse at Northridge, California,
Source: FEMA Photo Library



Caption: Soft Story Building Collapse at Northridge, California.

One tool used to describe earthquake intensity is the Magnitude Scale. The Magnitude Scale is sometimes referred to as the Richter Scale. The two are similar but not exactly the same. The Magnitude Scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The Scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released, however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a Magnitude 7 (M7) earthquake is 100 times (10 X 10) more powerful than a M5 earthquake and releases 1,024 times (32 X 32) the energy.

Photo: Portable Seismic Station
Source: USGS



Caption: Two portable sensors: a strong motion sensor (to record strong shaking that can be felt) and a broadband sensor (to record weak motion for detecting small earthquakes) buried into the ground to detect earthquakes. These stations can be quickly deployed and send real-time data back to the USGS via cellular telemetry immediately after they are installed.



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2a.

Q: Does the plan include information on **previous occurrences** of hazard events for each jurisdiction?
(Requirement §201.6(c)(2)(i))

A: See **Previous Occurrences of Earthquakes in the City of South El Monte** below.

Previous Occurrences of Earthquakes in the City of South El Monte

According to USGS, the most recent earthquake to impact the City was on September 19, 2020. Around 11:40pm, a magnitude 4.54 earthquake shook the City. No injuries or damage was reported. The earthquake had a depth of 16.9 km with an epicenter two miles outside of the City. The epicenter was very close to the Whittier Narrows earthquake from 1987, which was a magnitude 5.9 that killed eight people.

Map: M4.5 Earthquake Impacting the City of South El Monte, September 19, 2020
(Source: USGS)
(Yellow star indicates epicenter, purple star indicates City)

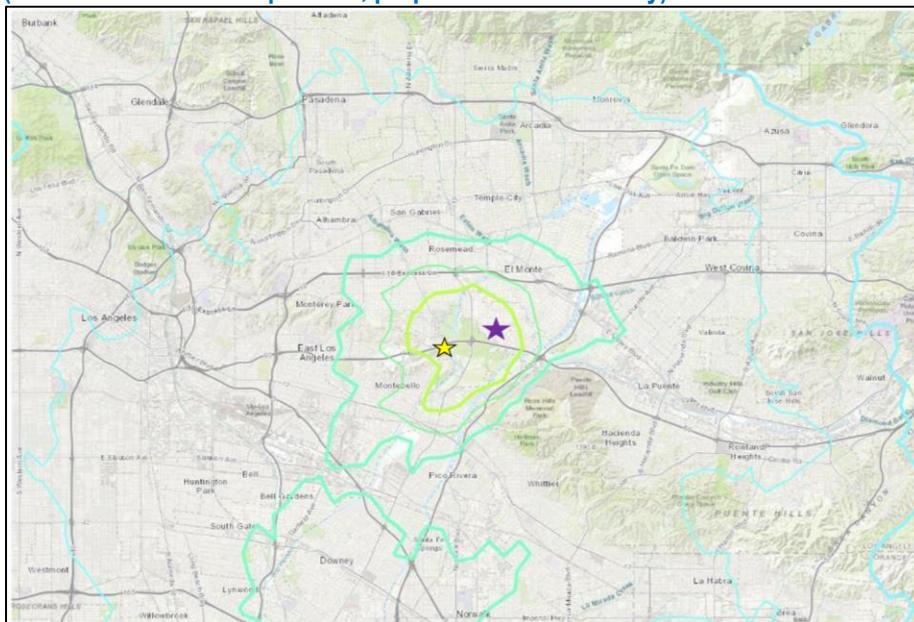


Photo: Northern end of rupture resulting from the M7.1 Searles Valley quake
Source: Ryan Gold, USGS



Caption: Fault rupture crosses dirt road, with California Geological Survey vehicles for scale. Displacement at this location is primarily normal (vertical). Photograph taken near the northern end of the rupture resulting from the M7.1 Searles Valley earthquake.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1a.

Q: Does the plan include a general **description** of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Regional Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3b.

Q: Is there a description of each identified hazard’s overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Regional Conditions** below.

Regional Conditions

According to the County of Los Angeles All-Hazards Mitigation Plan (2019), the county is susceptible to 3,041.91 (63.90%) square miles with violent low frequency shaking potential; and 711.01 square miles (14.93%) with extreme low frequency shaking potential.

The All-Hazards Mitigation Plan lists significant earthquakes in the county over the past 50 years including:

**Table: Earthquakes Impacting County of Los Angeles
(Source: County of Los Angeles All-Hazards Mitigation Plan, 2019)**

Date	Location	Impact
March 28, 2014	La Habra (M 5.1)	few injuries and \$10 million dollars in damages
July 29, 2008	Chino Hills (M 5.5)	8 injuries and limited damages
January 17, 1994	Northridge (M 6.7)	57 deaths, 8,700 injuries and up to \$40 billion dollars in damages



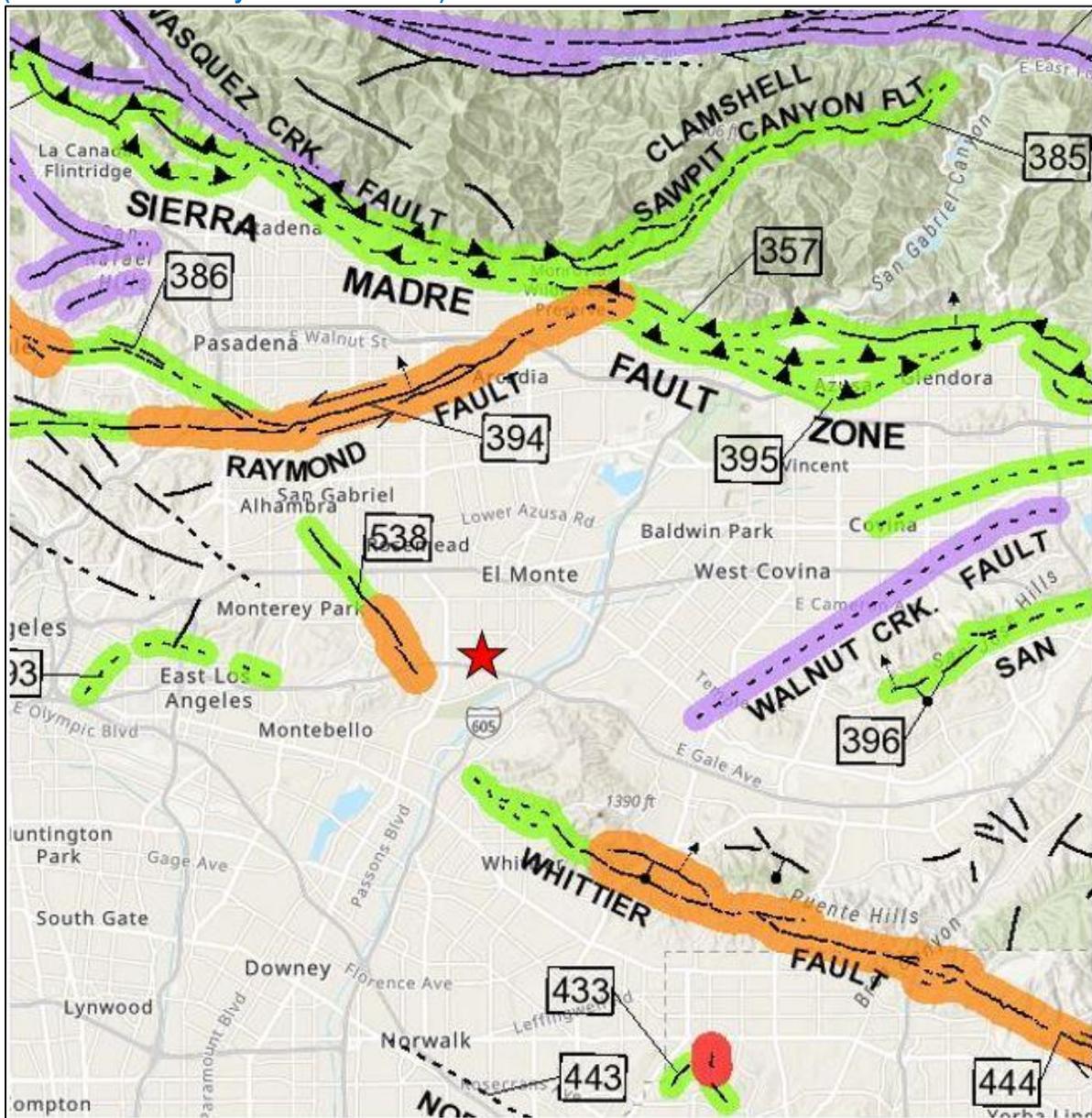
June 28, 1991	Sierra Madre (M 5.6)	1 death, 100+ injuries and up to \$40 million dollars in damages
February 28, 1990	Upland (M 5.7)	30 injuries and \$12.7 million dollars in damages
October 1, 1987	Whittier (M 5.9)	8 deaths, 200 injuries and \$358 million in damages
February 9, 1971	San Fernando (M 6.6)	58 – 65 deaths, 200 – 2,000 injuries and up to \$553 million in damages

Violent perceived shaking can produce the potential for heavy damage. According to the USGS, this could mean that well-designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse. In extreme shaking, the USGS notes that some well-built wooden structures could be destroyed, and most masonry and frame structures with foundations could be destroyed.

Map: Regional Faults

(Source: Department of Conservation)

(Red star indicates City of South El Monte)





San Andreas Fault Zone

The epicenter of the San Andreas Fault lies approximately 124 miles Southeast of the City. This fault zone extends from the Gulf of California northward to the Cape Mendocino area where it continues northward along the ocean floor. The total length of the San Andreas Fault Zone is approximately 750 miles. The activity of the fault has been recorded during historic events, including the 1906 (M8.0) event in San Francisco and the 1857 (M7.9) event between Cholame and San Bernardino, where at least 250 miles of surface rupture occurred. These seismic events are among the most significant earthquakes in California history. Geologic evidence suggests that the San Andreas Fault has a 50 percent chance of producing a magnitude 7.5 to 8.5 quake (comparable to the great San Francisco earthquake of 1906) within the next 30 years.

Map: San Andreas Fault M7.8

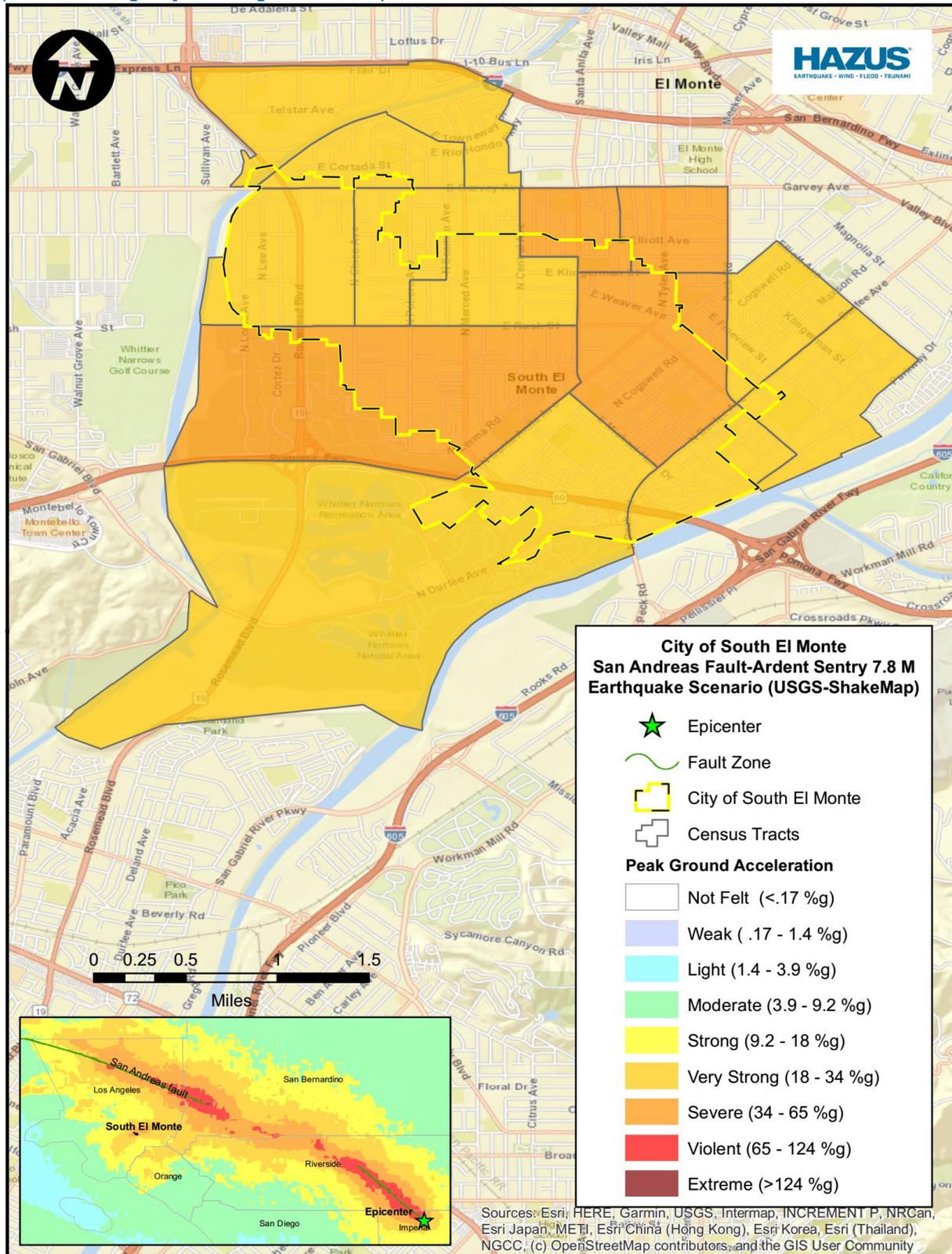
(Source: California Geological Survey)

(Yellow star indicates epicenter, purple star indicates City of South El Monte)





Map: Shake Intensity Map - San Andreas Fault M7.8
 (Source: Emergency Planning Consultants)

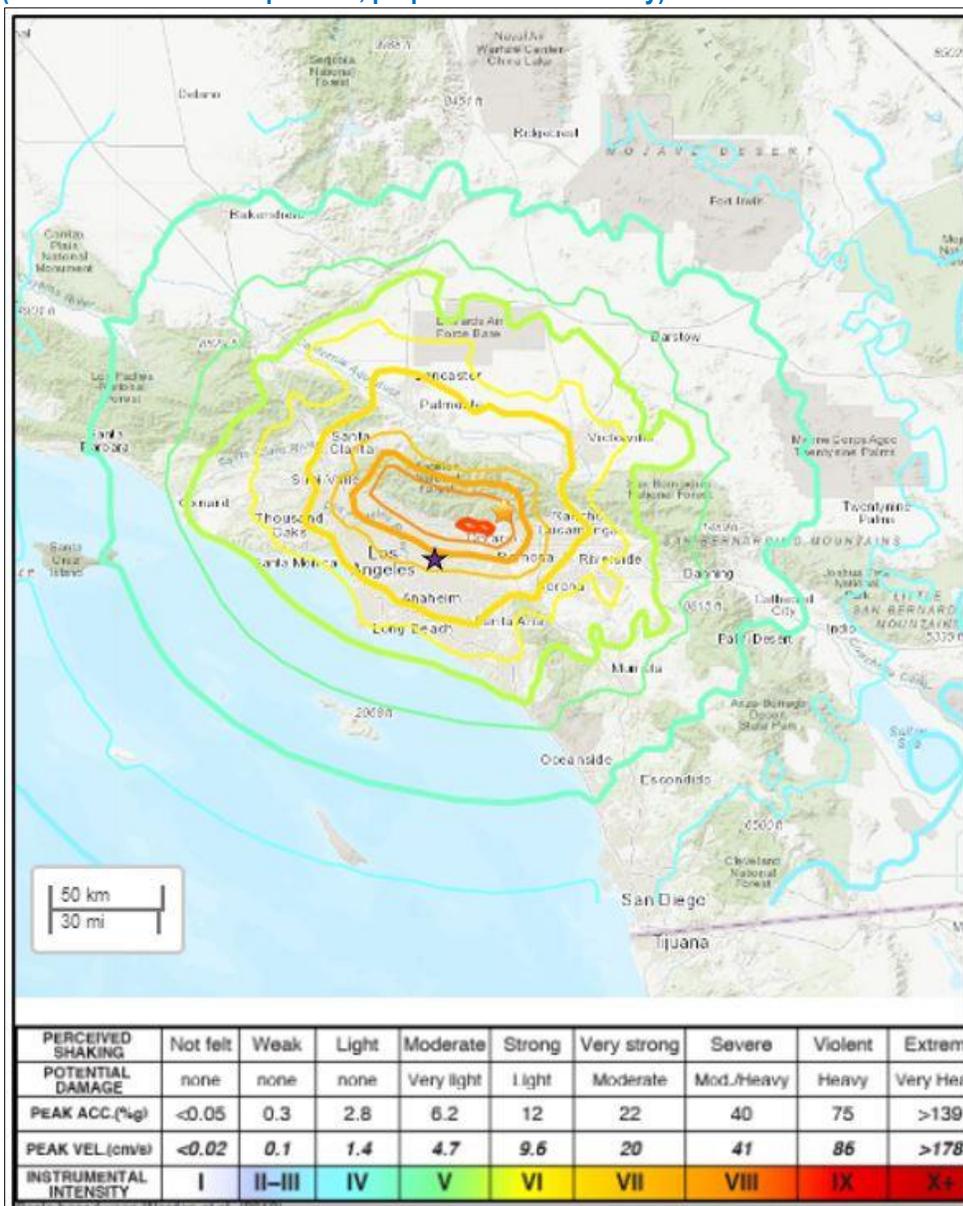




Sierra Madre Fault Zone

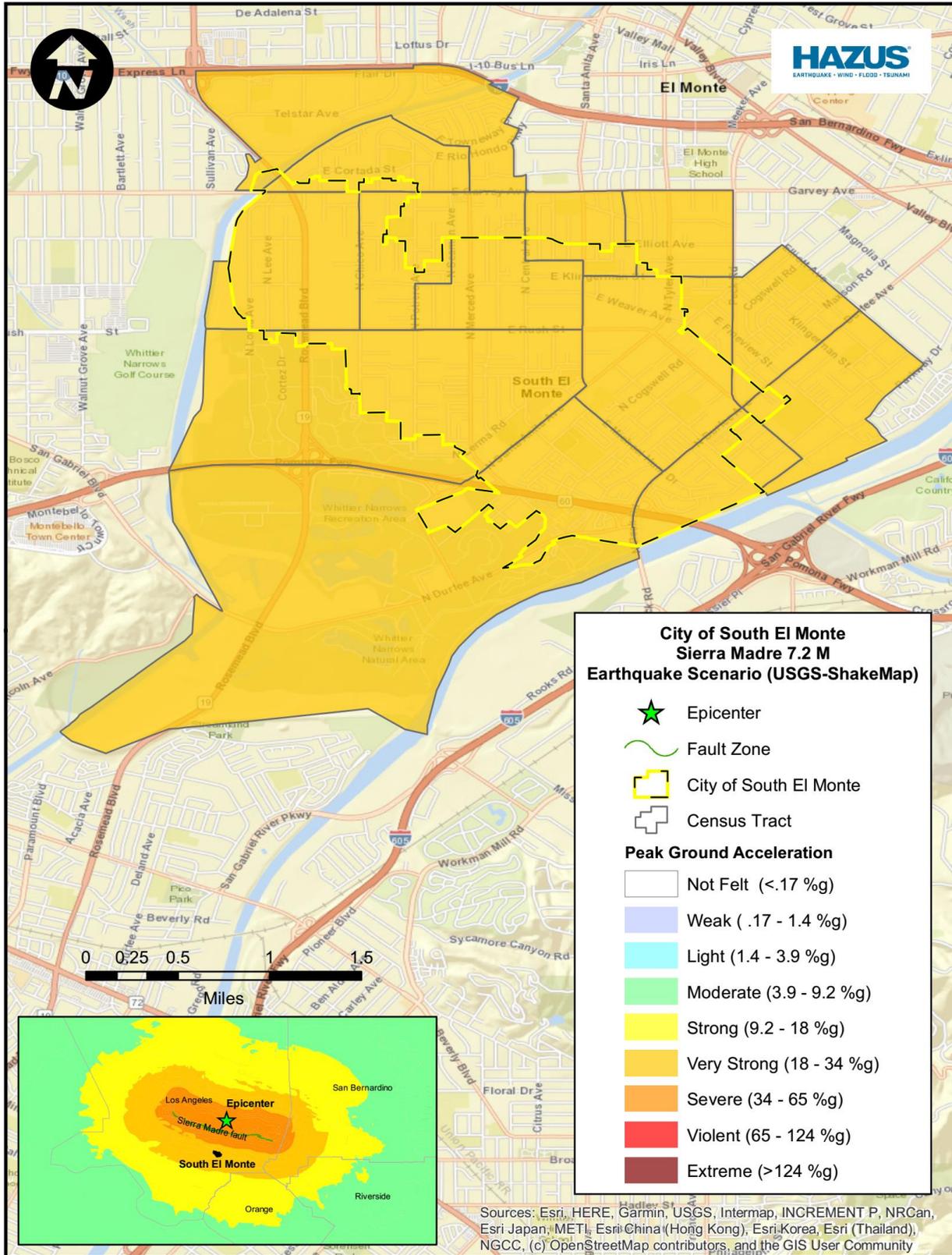
The Sierra Madre fault zone is a series of moderate angle, north-dipping, reverse faults (thrust faults). The epicenter sits roughly 22 miles Northeast of the City. Movement along these frontal faults has resulted in the uplift of the San Gabriel Mountains. According to the Southern California Earthquake Data Center, rupture on the Sierra Madre fault zone (theoretically) could be limited to one segment at a time, it has recently been suggested that a large event on the San Andreas fault to the north (like that of 1857) could cause simultaneous rupture on reverse faults south of the San Gabriel Mountains – the Sierra Madre fault zone being a prime example of such. Whether this could rupture multiple Sierra Madre fault zone segments simultaneously is unknown. Seismic activity on the Sierra Madre Fault is expected to have a maximum magnitude of 7.2.

Map: Sierra Madre Fault M7.2
 (Source: California Geological Survey)
 (Yellow star indicates epicenter, purple star indicates City)





Map: Shake Intensity Map – Sierra Madre Fault M7.2
 (Source: Emergency Planning Consultants)

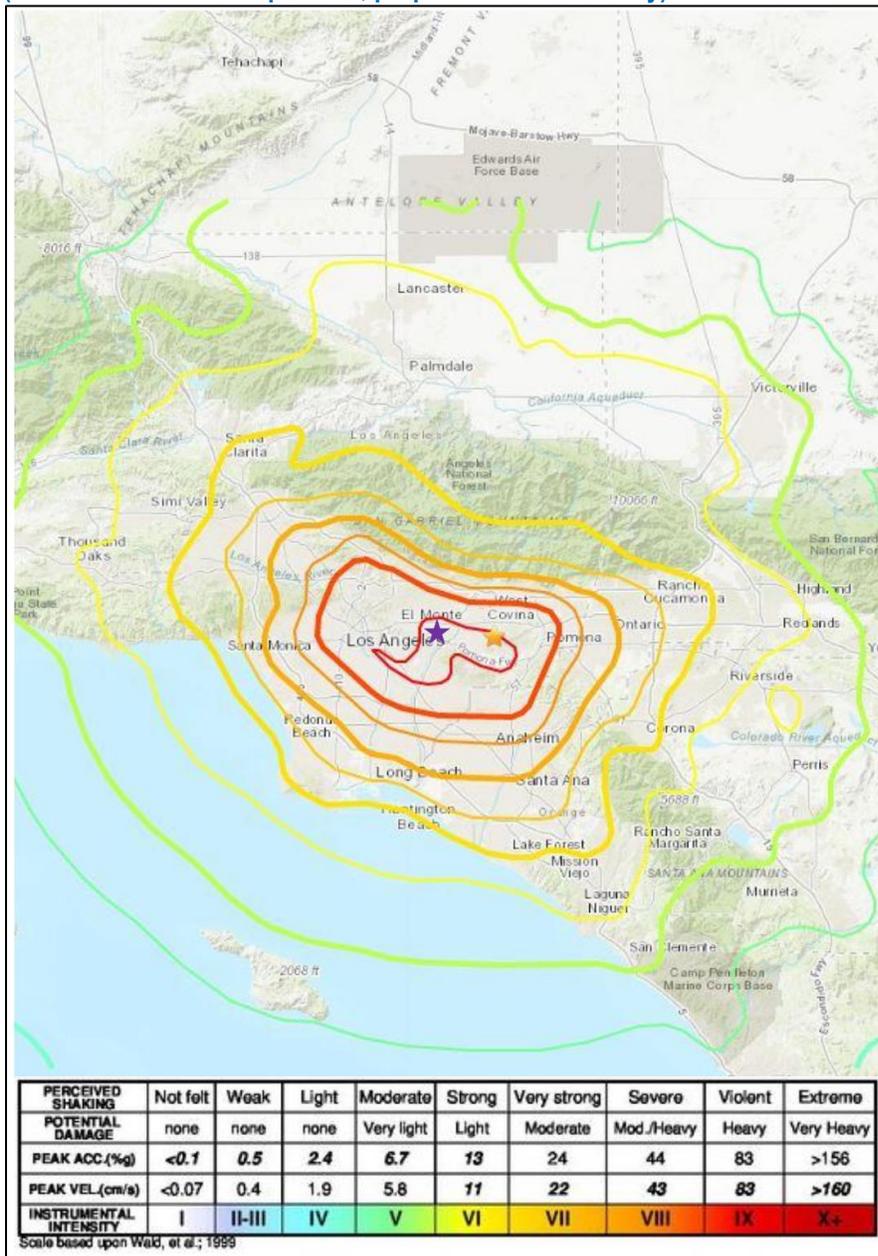




Puente Hills Fault

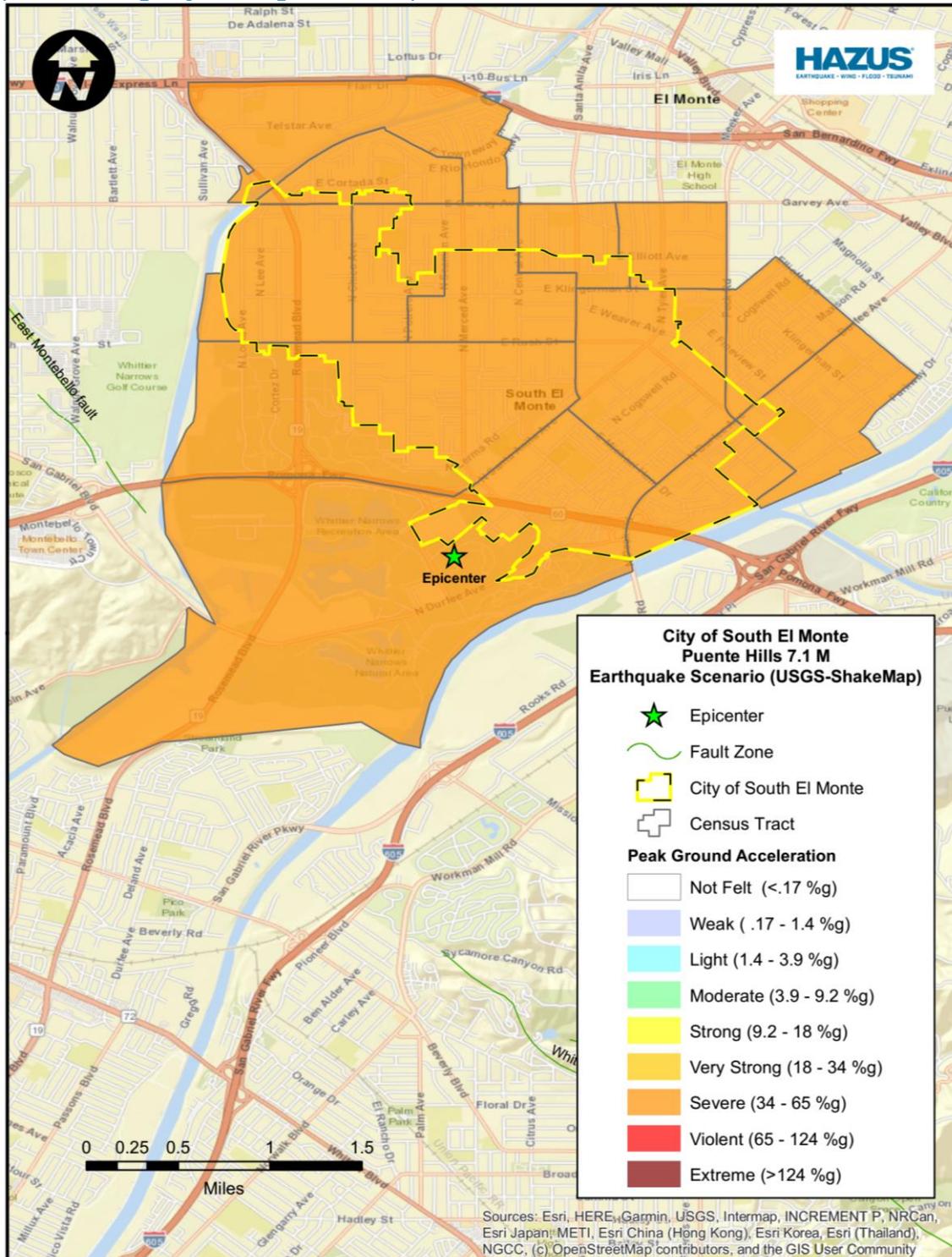
The Puente Hills fault is located approximately 7 miles East of the City. According to USGS, the Puente Hills Fault was most recently responsible for the M5.1 La Habra earthquake on March 28, 2014 which caused an estimated \$2.6 million in damage. The USGS estimates that a future, larger M7.5 earthquake along the Puente Hills fault could kill 3,000 to 18,000 people and cause up to \$250 billion in damage. In contrast, a larger M8.0 quake along the San Andreas would cause an estimated 1,800 deaths.

Map: Puente Hills Fault M7.1
 (Source: California Geological Survey)
 (Yellow star indicates epicenter, purple star indicates City)





Map: Shake Intensity Map – Puente Hills Fault M7.1
 (Source: Emergency Planning Consultants)





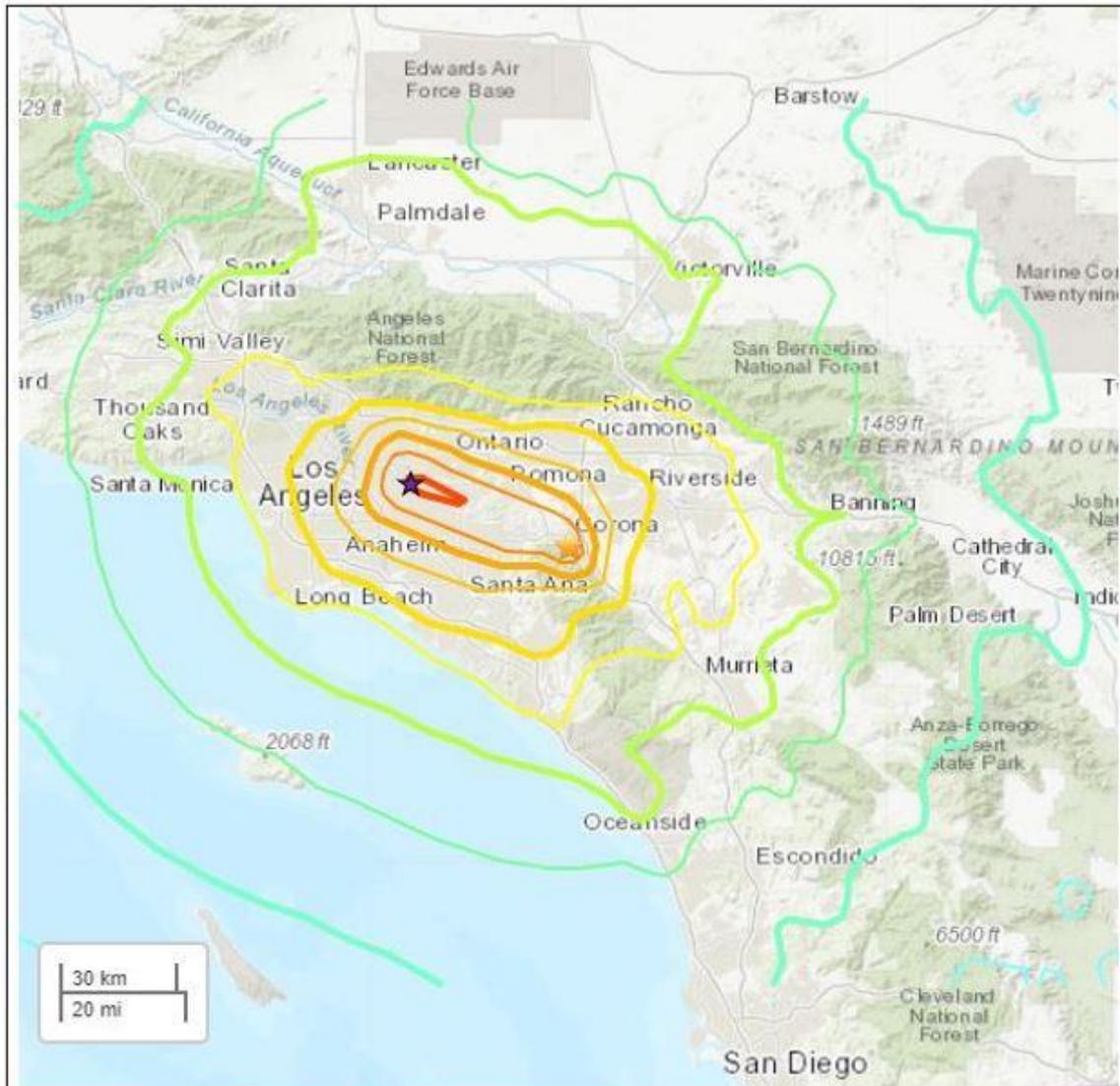
Whittier Fault

The Whittier Fault is about 15 miles Southeast of the City. The fault is a 40-kilometer right-lateral strike-slip fault that runs along the Chino Hills range between the cities of Chino Hills and Whittier. The fault has a slip rate of 2.5 to 3.0 millimeters per year. It is estimated that this fault could generate a quake of 6.0 – 7.2M.

Map: Whittier Fault M7.0

(Source: California Geological Survey)

(Yellow star indicates epicenter, purple star indicates City)

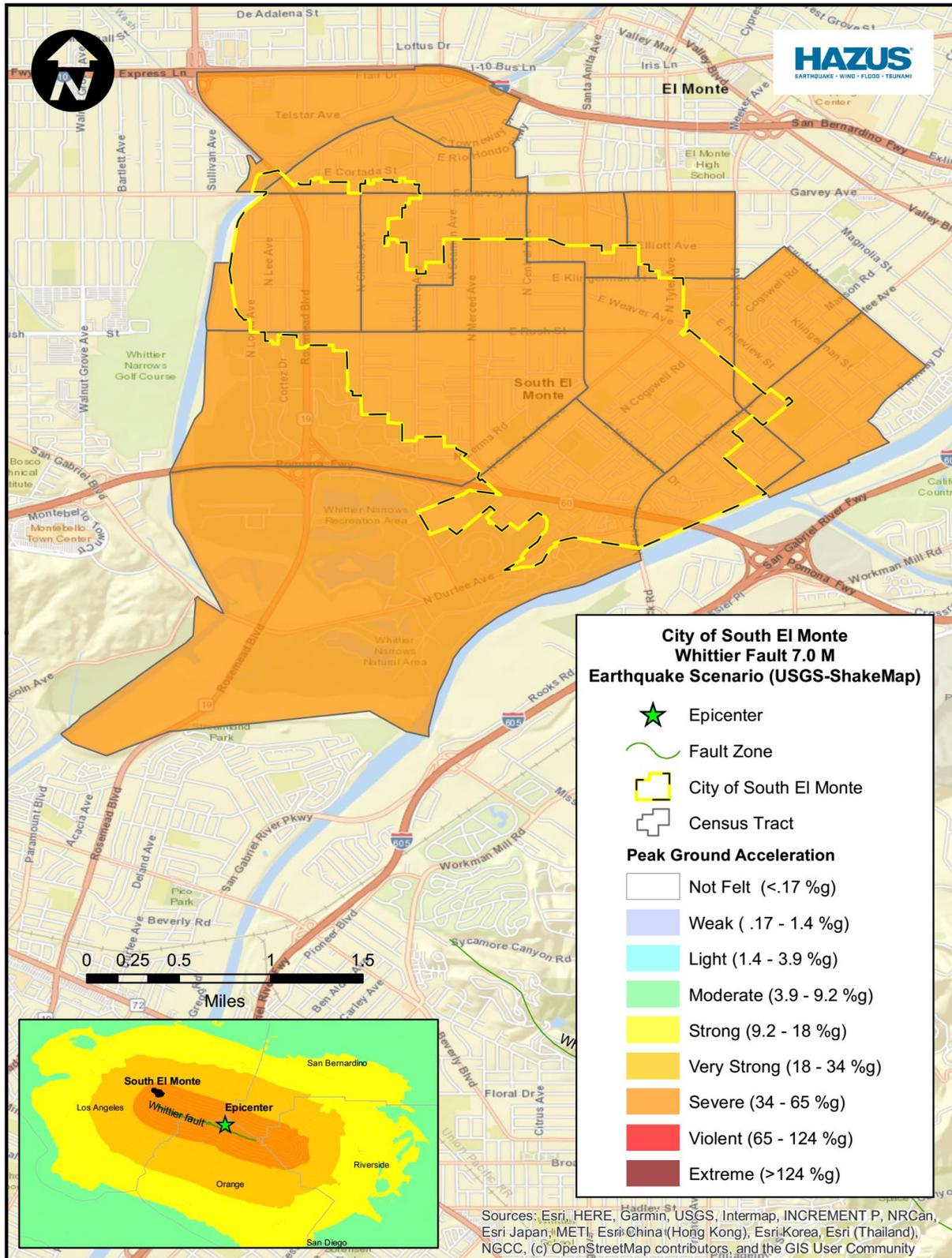


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)



Map: Shake Intensity Map – Whittier Fault M7.0
 (Source: Emergency Planning Consultants)



Earthquake Related Hazards

Ground shaking, landslides, and liquefaction are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Earthquake-Induced Landslides

Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes.

Rock falls may happen suddenly and without warning but are more likely to occur in response to earthquake induced ground shaking, during periods of intense rainfall, or as a result of human activities, such as grading and blasting. Ground acceleration of at least 0.10g in steep terrain is necessary to induce earthquake-related rock falls.

Photo: Landslide in Southern California
Source: Jim Bowers, USGS



Caption: Bluebird Canyon landslide, June 1, 2005, near Laguna Beach, California that caused 350 homes to be evacuated, of which 15 were damaged or destroyed. The movement was most likely caused by heavy rains in January and February 2005.

Liquefaction

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other events. Liquefaction occurs in saturated soils, which are soils in which the space between individual soil particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other. Because liquefaction only occurs in saturated soil, its effects



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3a.

Q: Is there a description of each hazard's **impacts** on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Earthquakes in the City of South El Monte** below.

Impact of Earthquakes in the City of South El Monte

Based on the risk assessment, it is evident that earthquakes will continue to have potentially devastating economic impacts to the City. Impacts that are not quantified, but can be anticipated in future events, include:

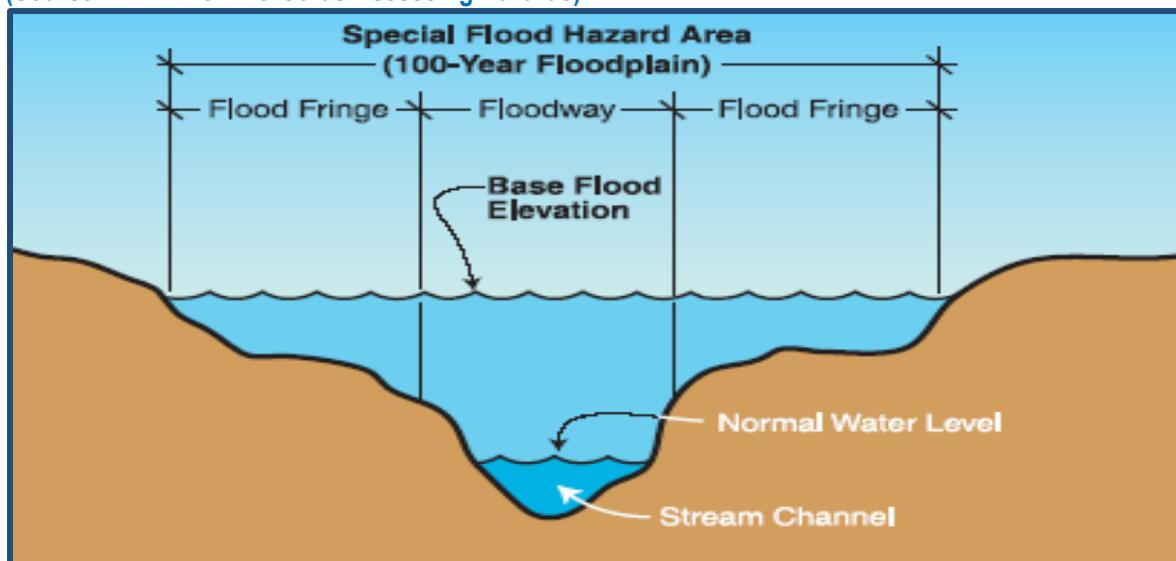
- ✓ Minor to major disruption of revenue service on bus and rail
- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Secondary health hazards e.g. mold and mildew
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed

Flood Hazards

Hazard Definition

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe. The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. **Schematic: Floodplain and Floodway** shows the relationship of the floodplain and the floodway.

Figure: Floodplain and Floodway
(Source: FEMA How-To-Guide Assessing Hazards)



Types of Flooding

Two types of flooding primarily affect the region: slow-rise or flash flooding. Slow-rise floods may be preceded by a warning period of hours or days. Evacuation and sandbagging for slow-rise floods have often effectively lessened flood related damage. Conversely, flash floods are most difficult to prepare for, due to extremely limited, if any, advance warning and preparation time.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2a.

Q: Does the plan include information on **previous occurrences** of hazard events for each jurisdiction?
(Requirement §201.6(c)(2)(i))

A: See **Previous Occurrences of Flooding in the City of South El Monte** below.

Previous Occurrences of Flooding in the City of South El Monte

Urban flooding frequently occurs at the New Temple Park between Cogswell on the north side of Central.



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1a.

Q: Does the plan include a general **description** of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Regional Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3b.

Q: Is there a description of each identified hazard’s overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Regional Conditions** below.

Regional Conditions

According to the City’s General Plan (2000), potential flooding hazards may result from failure of a dam or the overflow of watercourses in the event of excessive and unusual storm run-off. South El Monte is not designated by the National Flood Insurance Program as being in a 100-year floodplain, instead the City is rated as “No Special Flood Hazard Area”. However, the City recognizes the potential for unexpected events along the Rio Hondo River which runs north to south towards the western boundary of the City and the San Gabriel River which runs north to south along the City’s eastern boundary. Overflow from these channelized rivers or possibly dam inundation from Santa Fe Dam would pose a threat to life and safety and would cause severe damage to public and private property.

According to the County of Los Angeles All-Hazards Mitigation Plan (2019), there have been 13 Presidential Disaster Declarations for flooding emergencies affecting Los Angeles County, including:

Table: Los Angeles County Presidential Disaster Declarations - Flooding
(Source: County of Los Angeles AHMP, 2019)

Date	Description
January 18, 2017-January 23, 2017	California Severe Winter Storms, Flooding, and Mudslides (DR-4305)
January 7, 1993-February 19, 1993	California Winter Storms (DR-979)
February 12 and 19, 1992	California Winter Storms (DR-935)
December 21, 1988	Coastal Storms (DR-812)
February 7 and 21, 1980	Southern California Winter Storms (DR-615)
February 15, 1978	California Winter Storms Flooding (DR-547)
August 15, 1969	California Flooding (DR-270)
February 25, 1963	California Severe Storms, Heavy Rains, Flooding (DR-145)
October 24, 1962	California Severe Storms, Flooding (DR-138)
March 6, 1962	California Floods (DR-122)
April 4, 1958	California Heavy Rainstorms, Flood (DR-82)
December 23, 1955	California Flooding (DR-47)
February 5, 1954	California Flood and Erosion (Disaster Declaration # [DR]-15)



Urban Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. The water moves from the clouds, to the ground, and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in flood waters that rise very rapidly and peak with violent force.

A majority of the area in the City of South El Monte has a high concentration of impermeable surfaces that either collect water or concentrate the flow of water in unnatural channels. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Localized ponding related to storm water runoff represents a minor flood hazard (see Dam Inundation Zones and Areas Susceptible to Ponding). The ponding problems result largely from inadequate drainage devices and/or streets that were not designed to accommodate the current runoff levels. Also, the City's location at the low end of the regional drainage basin creates conditions whereby storm waters can easily overwhelm the drainage system during a sudden, heavy rainstorm.

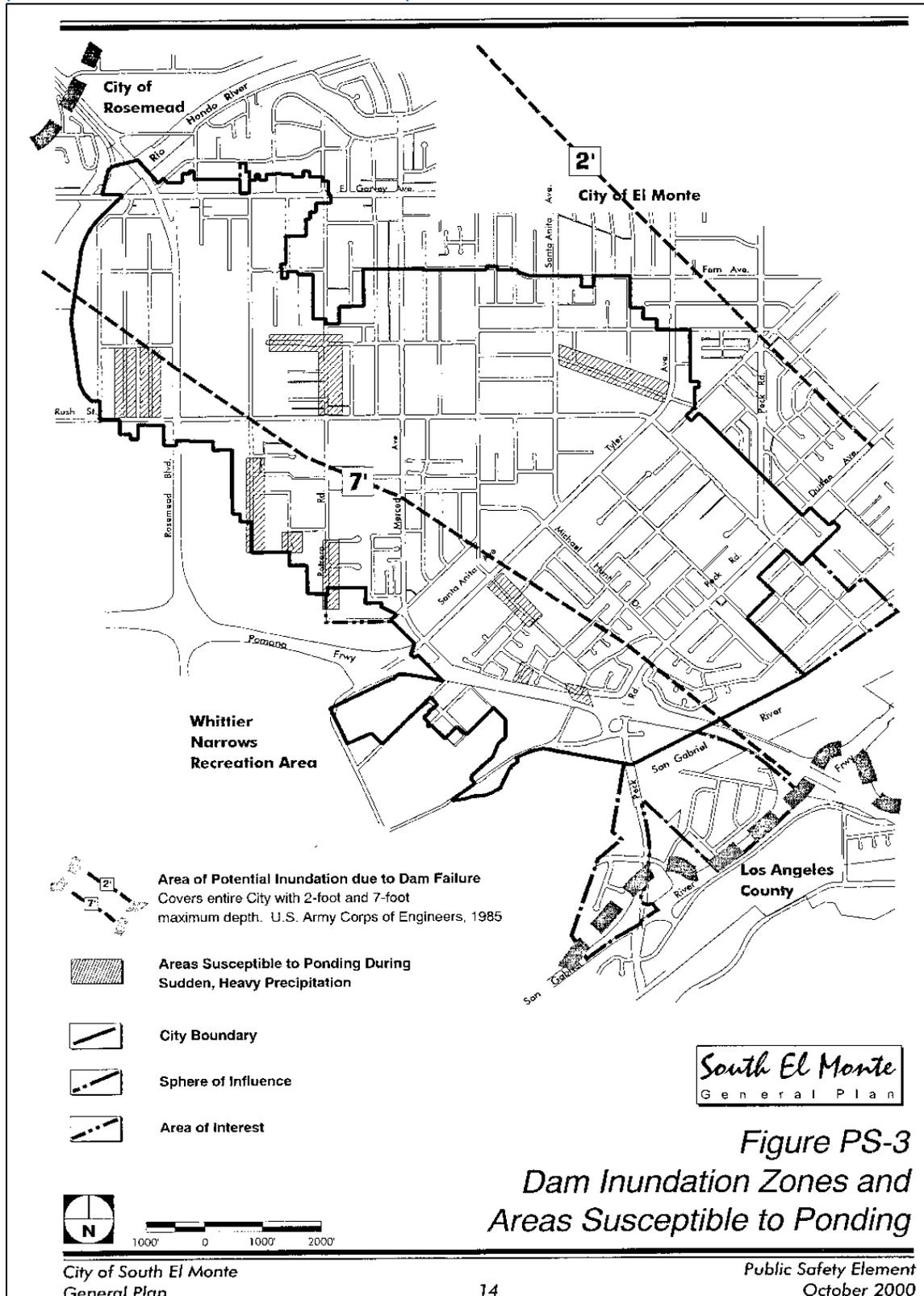
Dam Inundation

According to the City's General Plan (2000), loss of life and damage to structures, roads, and utilities may result from a dam failure. Economic losses can also result from a lowered tax base and lack of utility profits. These effects would certainly accompany the failure of one of the major dams upstream from the City of South El Monte. Because dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for warning, evacuation, and post-flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner.

Dam failure due to seismic activity has the potential to impact South El Monte and many communities in the San Gabriel Valley. The Santa Fe Dam in the San Gabriel Mountain foothills and Puddingstone Dam near San Dimas represent the two dams of concern. The U.S. Army Corps of Engineers flood emergency plan data indicate that failure of the Santa Fe Dam would result in the entire area of the City being flooded. Water depths would range from two to ten feet.



Map: Dam Inundation Zones and Areas Susceptible to Ponding
 (Source: South El Monte General Plan, 2000)





Map: Flood Risk Map - Los Angeles County, California
 (Source: FEMA Flood Map Service Center)





Q&A | ELEMENT C. MITIGATION STRATEGY | C2

Q: Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))

A: See **NFIP Participation** below.

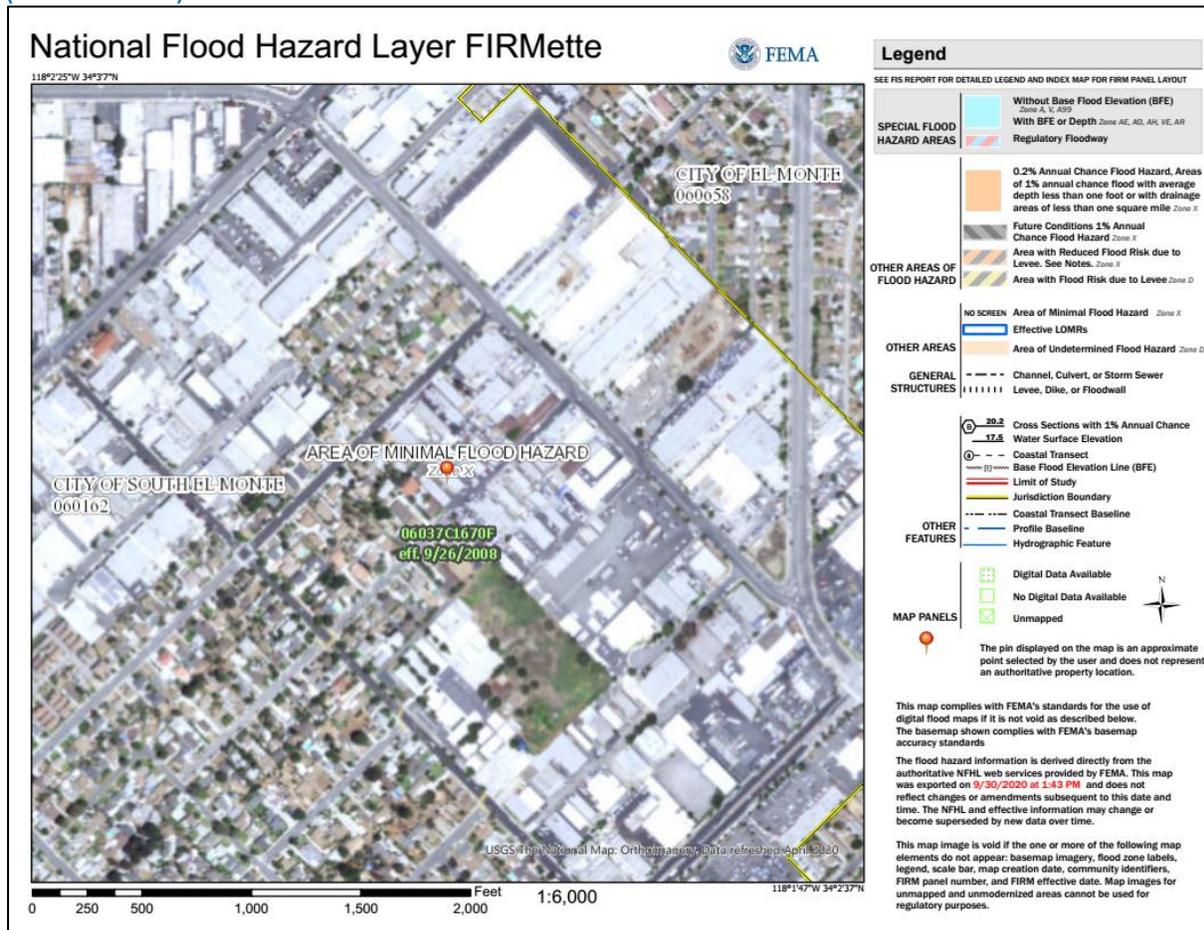
National Flood Insurance Program

The City participates in the National Flood Insurance Program (NFIP). Created by Congress in 1968, the NFIP makes flood insurance available in communities that enact minimum floodplain management rules consistent with the Code of Federal Regulations §60.3.

The City of South El Monte is in a “A No Special Flood Hazard Area”. NSFHA is an area that is in a moderate- to low-risk flood zone (Zones B, C, X Pre- and Post-FIRM). According to **Map: Flood Insurance Rate Map**, the built areas of the City are in “Flood Zone X”. Zone X is defined as the area outside the 500-year flood and protected by levee from 100-year flood.

An NSFHA is not in any immediate danger from flooding caused by overflowing rivers or hard rains. However, it’s important to note that structures within a NSFHA are still at risk. In fact, over 20-percent of all flood insurance claims come from areas outside of mapped high-risk flood zones.

Map: Flood Insurance Rate Map #060162
(Source: FEMA)





Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.



ZONE	DESCRIPTION
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

Undetermined Risk Areas

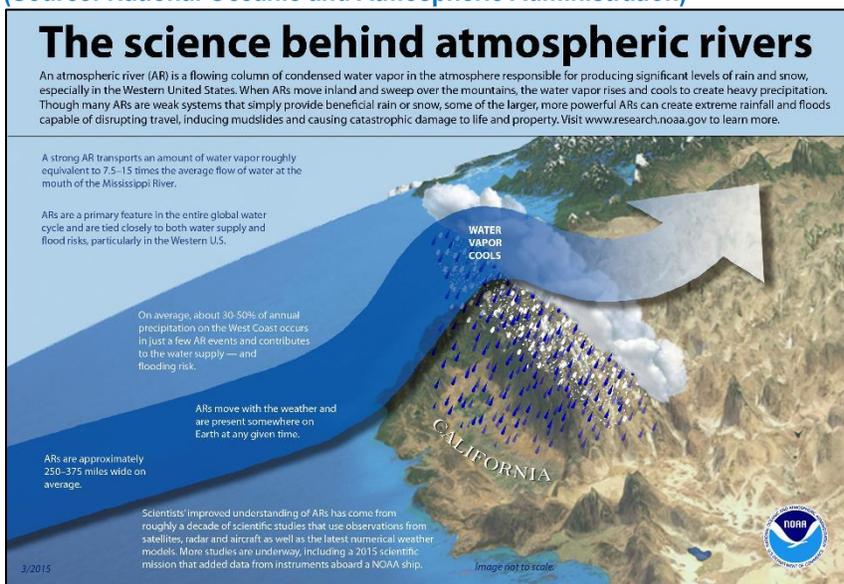
ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Atmospheric Rivers

According to the National Oceanic and Atmospheric Administration (NOAA), atmospheric rivers are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics. These columns of vapor move with the weather, carrying an amount of water vapor roughly equivalent to the average flow of water at the mouth of the Mississippi River. When the atmospheric rivers make landfall, they often release this water vapor in the form of rain or snow.

Although atmospheric rivers come in many shapes and sizes, those that contain the largest amounts of water vapor and the strongest winds can create extreme rainfall and floods, often by stalling over watersheds vulnerable to flooding. These events can disrupt travel, induce mudslides and cause catastrophic damage to life and property. A well-known example is the "Pineapple Express," a strong atmospheric river that is capable of bringing moisture from the tropics near Hawaii over to the U.S. West Coast.

Graphic: Atmospheric Rivers
 (Source: National Oceanic and Atmospheric Administration)





While atmospheric rivers are responsible for great quantities of rain that can produce flooding, they also contribute to beneficial increases in snowpack. A series of atmospheric rivers fueled the strong winter storms that battered the U.S. West Coast from western Washington to southern California from December 10–22, 2010, producing 11 to 25 inches of rain in certain areas. These rivers also contributed to the snowpack in the Sierras, which received 75 percent of its annual snow by December 22, the first full day of winter.

NOAA research (e.g., [NOAA Hydrometeorological Testbed](#) and Cal Water) uses satellite, radar, aircraft and other observations, as well as major numerical weather model improvements, to better understand atmospheric rivers and their importance to both weather and climate.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3a.

Q: Is there a description of each hazard’s **impacts** on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Flooding in the City of South El Monte** below.

Impact of Flooding in the City of South El Monte

Floods and their impacts vary by location and severity of any given flood event, and likely only affect certain areas of the region during specific times. Based on the risk assessment, it is evident that floods will continue to have potentially devastating economic impacts to the City. Impacts that are not quantified, but anticipated in future events include:

- ✓ Minor to major disruption of revenue service on bus and rail
- ✓ Injury and loss of life
- ✓ Commercial and residential structural damage
- ✓ Disruption of and damage to public infrastructure
- ✓ Secondary health hazards e.g. mold and mildew
- ✓ Minor to major disruption of revenue service on bus and rail
- ✓ Damage to roads/bridges resulting in loss of mobility
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to citizens as temporary facilities and relocations would likely be needed



Epidemic/Pandemic and Vector-Borne Hazards

Hazard Definition

According to the California State Hazard Mitigation Plan (2018), the California Department of Public Health has identified epidemics, pandemics, and vector-borne diseases as specific hazards that could have a significant impact throughout the State.

According to the Centers for Disease Control (CDC), an epidemic refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population area. A pandemic refers to an epidemic that has spread over much longer period of time and in several countries or continents - usually affecting a large number of people. Vector-borne diseases are human illnesses caused by parasites, viruses and bacteria that are transmitted by vectors – living organisms that can transmit infectious pathogens between humans, or from animals to humans.



Seasonal Influenza

Seasonal influenza, also known as the flu, is a disease that attacks the respiratory system (nose, throat, and lungs) in humans. Seasonal influenza occurs every year. In the U.S., the influenza season typically occurs from October through May, peaking in January or February with yearly epidemics of varying severity. Although mild cases may be similar to a viral “cold,” influenza is typically much more severe. Influenza usually comes on suddenly; may include fever, headache, tiredness (which may be extreme), dry cough, sore throat, nasal congestion, and body aches; and can result in complications such as pneumonia. Persons aged 65 and older, those with chronic health conditions, pregnant women, and young children are at the highest risk for serious complications, including death.

Pandemic Influenza

A pandemic influenza occurs when a new influenza virus, for which there is little or no human immunity, emerges and spreads on a worldwide scale, infecting a large proportion of the human population. The 20th century saw three such pandemics. The most notable pandemic was the 1918 Spanish influenza pandemic that was responsible for 20 million to 40 million deaths throughout the world. There have been two pandemics in the 21st century; H1N1 in 2009, and the most recent COVID-19 outbreak in 2019. As demonstrated historically and currently, pandemic influenza has the potential to cause serious illness and death among people of all age groups and have a major impact on society. These societal impacts include significant economic disruption that can occur due to death, loss of employee work time, and costs of treating or preventing the spread of influenza.



H1N1 Influenza

In 2009 a pandemic of H1N1 influenza, popularly referred to as the swine flu, resulted in many hospitalizations and deaths. Pandemic H1N1 influenza is spread in the same way as seasonal influenza, from person to person through coughing or sneezing by infected people. In April 2009, two kids living more than 100 miles apart in Southern California came down with the flu. By mid-April, their illnesses had been diagnosed as being caused by a new strain of H1N1 influenza. Persons infected with H1N1 experienced fever and mild respiratory symptoms, such as coughing, runny nose, and congestion. In some cases, symptoms were severe and included diarrhea, chills, and vomiting, and in rare cases respiratory failure occurred. The H1N1 virus caused relatively few deaths in humans. In the United States, for example, it caused fewer deaths (between 8,870 and 18,300) than seasonal influenza, which, based on data for the years 2014–2019, causes an average of about 40,000 deaths each year. The H1N1 virus was most lethal in individuals affected by chronic disease or other underlying health conditions.

COVID-19

As of 2020, the CDC is responding to a pandemic of respiratory disease spreading from person to person caused by a novel (new) coronavirus. The disease has been named “Coronavirus Disease 2019” (abbreviated “COVID-19”). Coronaviruses are a large family of viruses that are common in people and many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people such as with Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

According to the CDC, many of the patients at the epicenter of the outbreak in Wuhan, Hubei Province, China had some link to a large seafood and live animal market, suggesting animal-to-person spread. Later, a growing number of patients reportedly did not have exposure to animal markets, indicating person-to-person spread. Person-to-person spread was subsequently reported outside Hubei and in countries outside China, including in the United States. Most international destinations now have ongoing community spread with the virus that causes COVID-19, as does the United States.

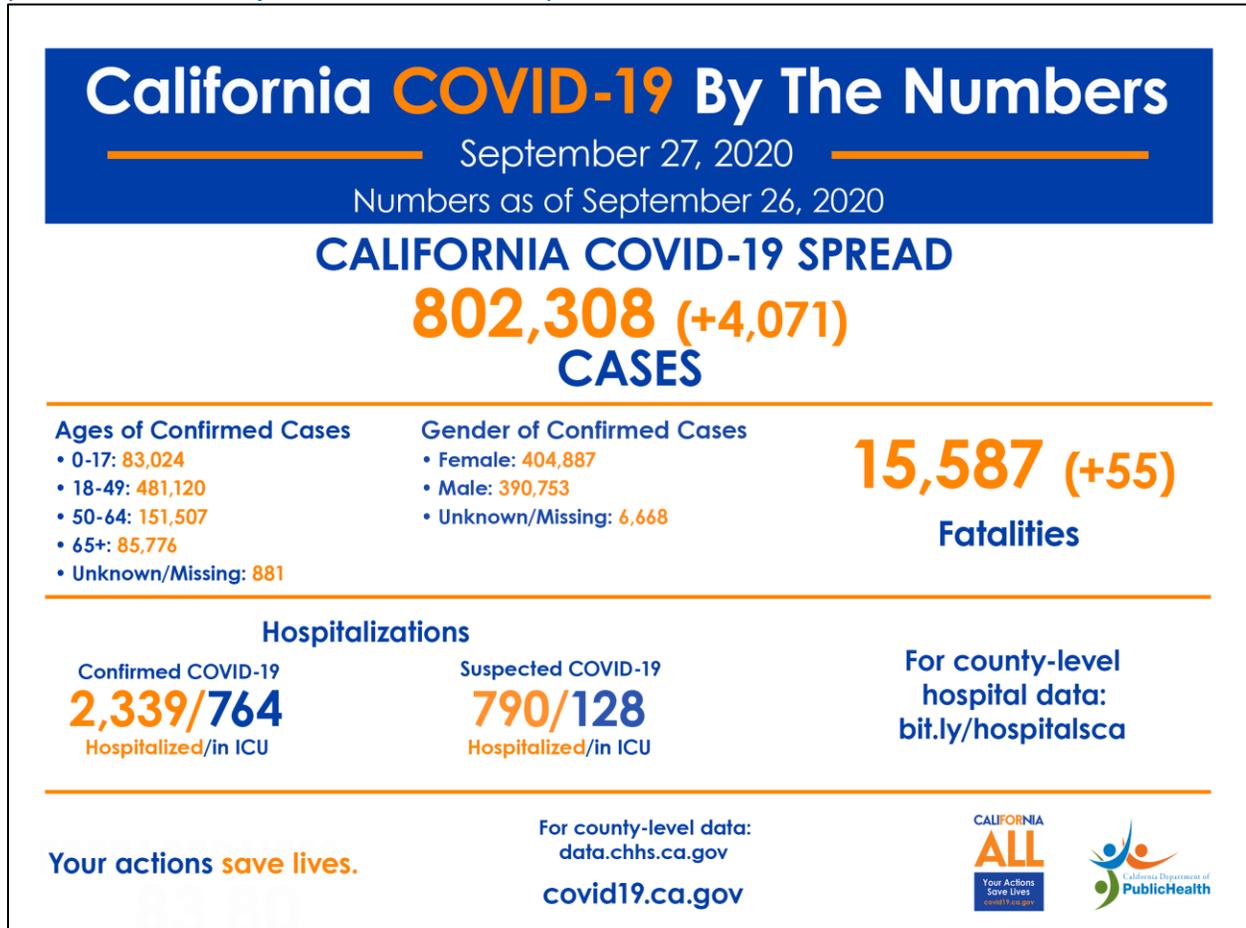
On March 4, 2020, Governor Newsom proclaimed a state of emergency in the California in response to the COVID-19 outbreak. On March 19, 2020, Governor Newsom issued an executive order directing all residents immediately to heed current State public health directives to stay home, except as needed to maintain continuity of operations of essential critical infrastructure sectors.





According to the California Department of Public Health, as of September 28, 2020, the state of California had ~800,000 confirmed cases of COVID-19 and almost ~15,500 people have died.

Figure: California COVID-19 by the Numbers
(Source: California Department of Public Health)



Avian Influenza

Avian Influenza, commonly referred to as “Bird Flu,” remains a looming pandemic threat. Avian Influenza primarily spreads from birds to birds and rarely to humans. Public health experts continue to be alert to the possibility that an avian virus may mutate or change so that it can be passed from birds to humans, potentially causing a pandemic in humans. Some strains of the Avian Influenza could arise from Asia or other continents where people have very close contact with infected birds. This disease could have spread from poultry farmers or visitors to live poultry markets who had been in very close contact with infected birds and contracted fatal strains of Avian Influenza. Thus far, Avian Influenza viruses have not mutated and have not demonstrated easy transmission from person to person. However, if Avian Influenza viruses were to mutate into a highly virulent form and become easily transmissible from person to person, the public health community would be very concerned about the potential for an influenza pandemic. Such a pandemic could disrupt all aspects of society and severely affect the economy.

Vector-Borne Diseases

Vector-borne diseases are human illnesses caused by parasites, viruses and bacteria that are transmitted by vectors. Every year there are more than 700,000 deaths from diseases such as malaria, dengue, schistosomiasis, human African trypanosomiasis, leishmaniasis, Chagas disease, yellow fever, Japanese encephalitis and onchocerciasis. Vectors are living organisms that can transmit infectious pathogens between humans, or from animals to humans. Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later transmit it into a new host, after the pathogen has replicated. Often, once a vector becomes infectious, they can transmit the pathogen for the rest of their life during each subsequent bite/blood meal.



Mosquito-Borne Viruses

Mosquito-borne viruses belong to a group of viruses commonly referred to as arboviruses (for arthropod-borne). Although 12 mosquito-borne viruses are known to occur in California, only West Nile virus (WNV), western equine encephalomyelitis virus (WEE), and St. Louis encephalitis virus (SLE) are significant causes of human disease. WNV continues to seriously affect the health of humans, horses, and wild birds throughout the state. Since 2003, there have been over 6,000 WNV human cases with 248 deaths, and over 1,200 equine cases.

WNV first appeared in the United States in 1999 in New York and rapidly spread across the country to California in subsequent years. California has historically maintained a comprehensive mosquito-borne disease surveillance and control program including the Mosquito-borne Virus Surveillance and Response Plan, which is updated annually in consultation with local vector control agencies.

Climate change will likely affect vector-borne disease transmission patterns. Changes in temperature and precipitation can influence seasonality, distribution, and prevalence of vector-borne diseases. A changing climate may also create conditions favorable for the establishment of invasive mosquito vectors in California.

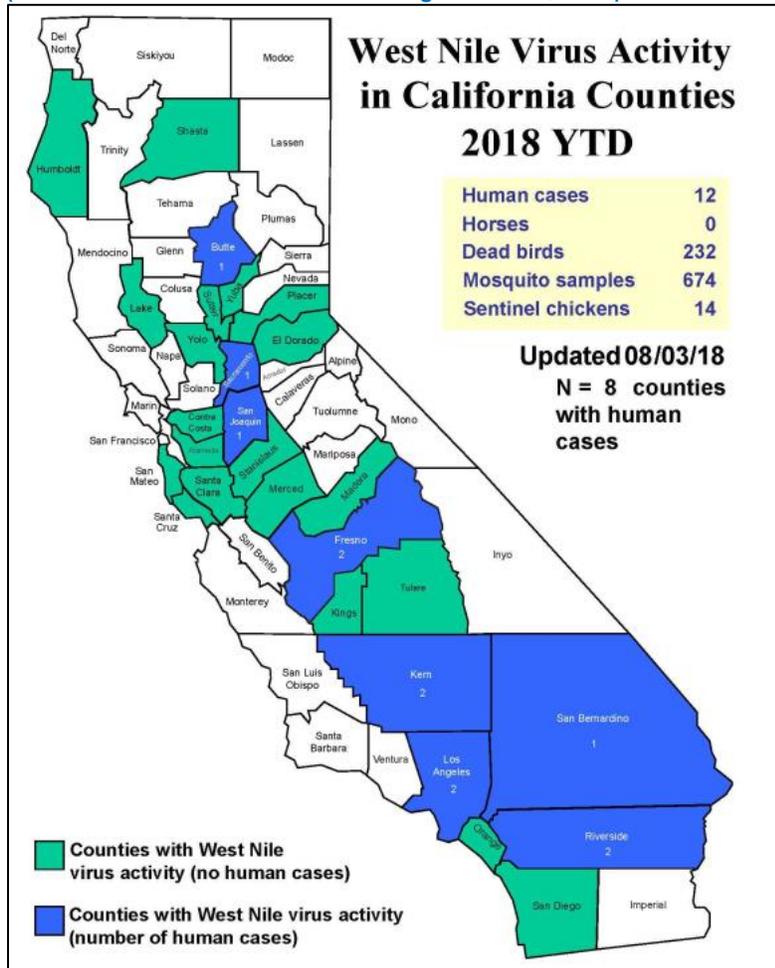
For most Californians, WNV poses the greatest mosquito-borne disease threat. Above-normal temperatures are among the most consistent factors associated with WNV outbreaks. Mild winters are associated with increased WNV transmission due, in part, to less mosquito and resident bird mortality. Warmer winter and spring seasons may also allow for transmission to start earlier. Such conditions also allow more time for virus amplification in bird-mosquito cycles, increasing the potential for mosquitoes to transmit WNV to people.

The effects of increased temperature are primarily through acceleration of physiological processes within mosquitoes, resulting in faster larval development and shorter generation times, more frequent mosquito biting, and shortening of the incubation period time required for infected mosquitoes to transmit WNV. During periods of drought, especially in urban areas, mosquitoes tend to thrive more due to changes in stormwater management practices. Mosquitoes in urban areas can reach higher abundance due to stagnation of water in underground stormwater systems that would otherwise be flushed by rainfall. Runoff from landscape irrigation systems mixed with



organic matter can also create ideal mosquito habitat. Drought conditions may also force birds to increase their utilization of suburban areas where water is more available, bringing these WNV hosts into contact with urban vectors.

Map: West Nile Virus Activity in California Counties
 (Source: California State Hazard Mitigation Plan, 2018)



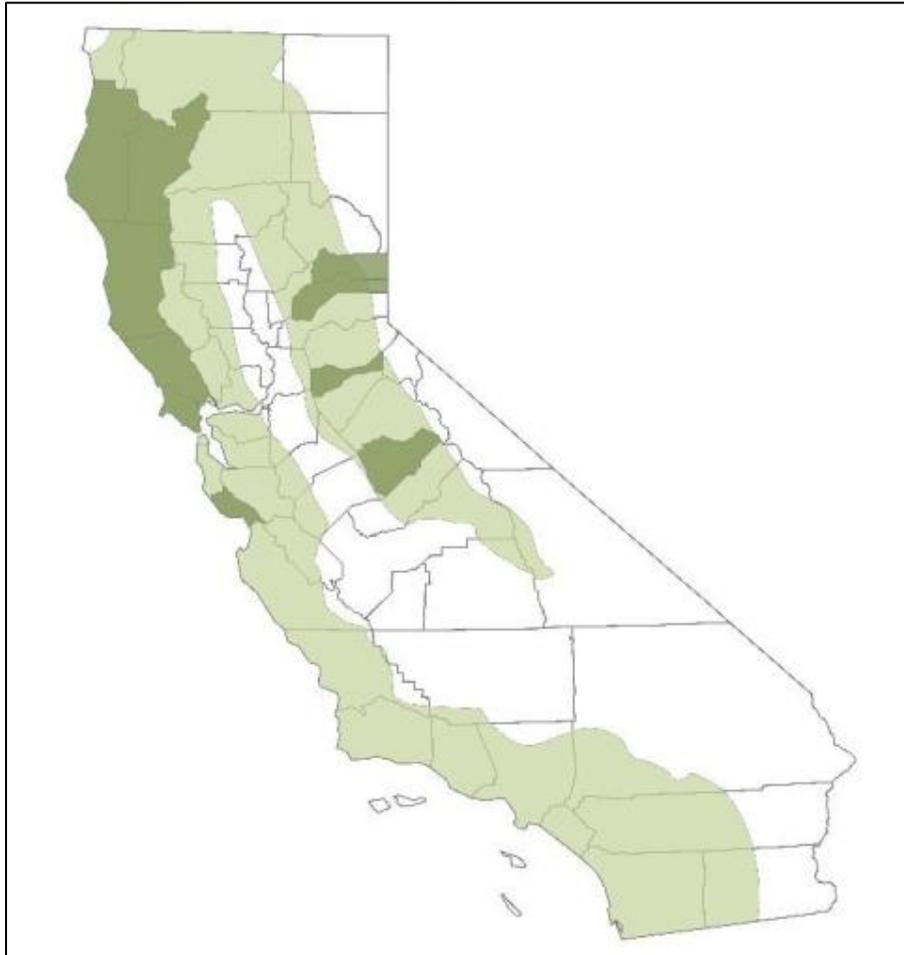
Lyme Disease

Lyme disease is caused by a spirochete (a corkscrew-shaped bacteria) called *Borrelia burgdorferi* and is transmitted by the Western black-legged tick. Lyme disease was first described in North America in the 1970s in Lyme, Connecticut, the town for which it was then named. Though the tick has been reported from 56 of the 58 counties in California, the highest incidence of disease occurs in the northwest coastal counties and northern Sierra Nevada counties with western-facing slopes. Ticks prefer cool, moist areas and can be found in wild grasses and low vegetation in both urban and rural areas.

The map below shows Western black-legged tick and Lyme disease incidence in California. The Western black-legged tick is commonly found in all green areas shown on the map; dark green areas on the map show where reported Lyme disease cases most often had exposure.



Map: Tick and Lyme Disease Incidence in California
(Source: State of California Hazard Mitigation Plan, 2018)



Valley Fever

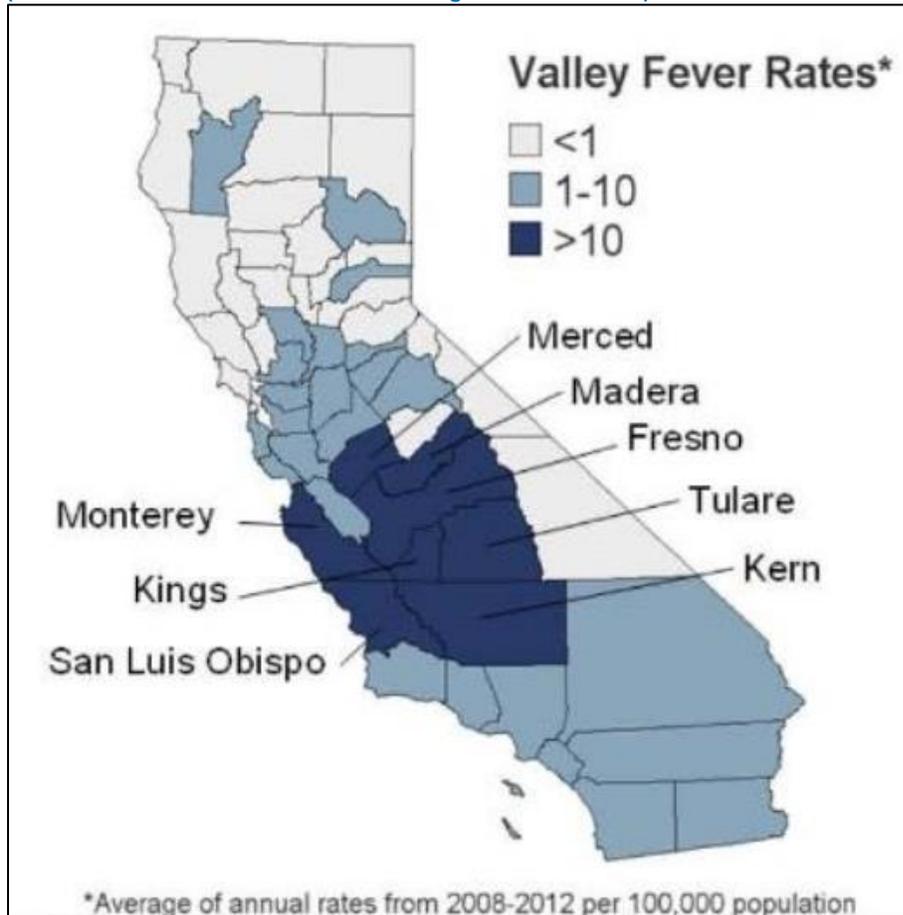
Valley Fever is caused by *Coccidioides*, a fungus that lives in the soil in the southwestern United States and parts of Mexico, Central America, and South America. Inhaling the airborne fungal spores can cause an infection called coccidioidomycosis, which is also known as “cocci” or “Valley Fever.”

Most people who are exposed to the fungus do not get sick, but some people develop flu-like symptoms that may last for weeks to months. In a very small proportion of people who get Valley Fever, the infection can spread from the lungs to other parts of the body and cause more severe conditions, such as meningitis or even death. Valley Fever cannot spread from person to person.

Most cases of Valley Fever in the U.S. occur in people who live in or have traveled to the southwestern United States, especially Arizona and California. The map below shows the areas where the fungus that causes Valley Fever is thought to be endemic, or native and common in the environment. The full extent of the current endemic areas is unknown and is a subject for further study



Map: Valley Fever Average Annual Rates by California County
(Source: State of California Hazard Mitigation Plan, 2018)





Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2a.

Q: Does the plan include information on **previous occurrences** of hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Previous Occurrences of Epidemic/Pandemic and Vector-Borne Diseases in the City of South El Monte** below.

Previous Occurrences of Epidemic/Pandemic and Vector-Borne Diseases in the City of South El Monte

Epidemic/Pandemic

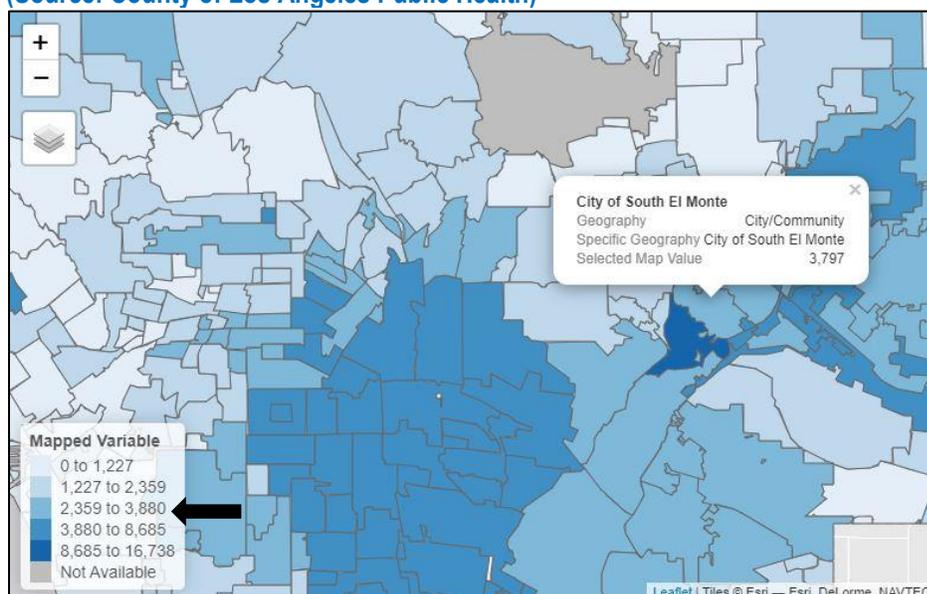
The City of South El Monte has been impacted by the COVID-19 pandemic. According to the County of Los Angeles Public Health Department, the City has a case rate of 3,816 per 100,000 people, and a death rate of 72 per 100,000 people.

Table: COVID-19 Cases in the City of South El Monte, September 27, 2020
(Source: County of Los Angeles Public Health Website, 2020)

Month	Positive Cases
Cases	797
Case Rate	3,816 <i>*(1) No. of cases per 100,000 residents</i>
Deaths	15
Death Rate	72 <i>*(2) No. of deaths per 100,000 residents</i>

* Case and death numbers include cases associated with Correctional Facility Outbreaks located in the City/Community. Due to reporting delays numbers may not align with outbreak investigation counts presented for Correctional Facilities on the list of Los Angeles Residential Congregate Settings with One or More Positive COVID-19 Cases.

Map: Adjusted Rates for Cases by City/Community, LA County COVID-19 Surveillance Dashboard
(Source: County of Los Angeles Public Health)





Vector-Borne

There are no recent examples of Vector-Borne illness in the City of South El Monte.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1a.

Q: Does the plan include a general description of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Regional Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3b.

Q: Is there a description of each identified hazard's overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Regional Conditions** below.

Regional Conditions

Epidemic/Pandemic

Los Angeles County continues to be impacted by COVID-19 and seasonal Influenza, as seen in the tables below:

Graph: Daily Cases and Deaths by Episode Date: COVID-19
(Source: County of Los Angeles Public Health)

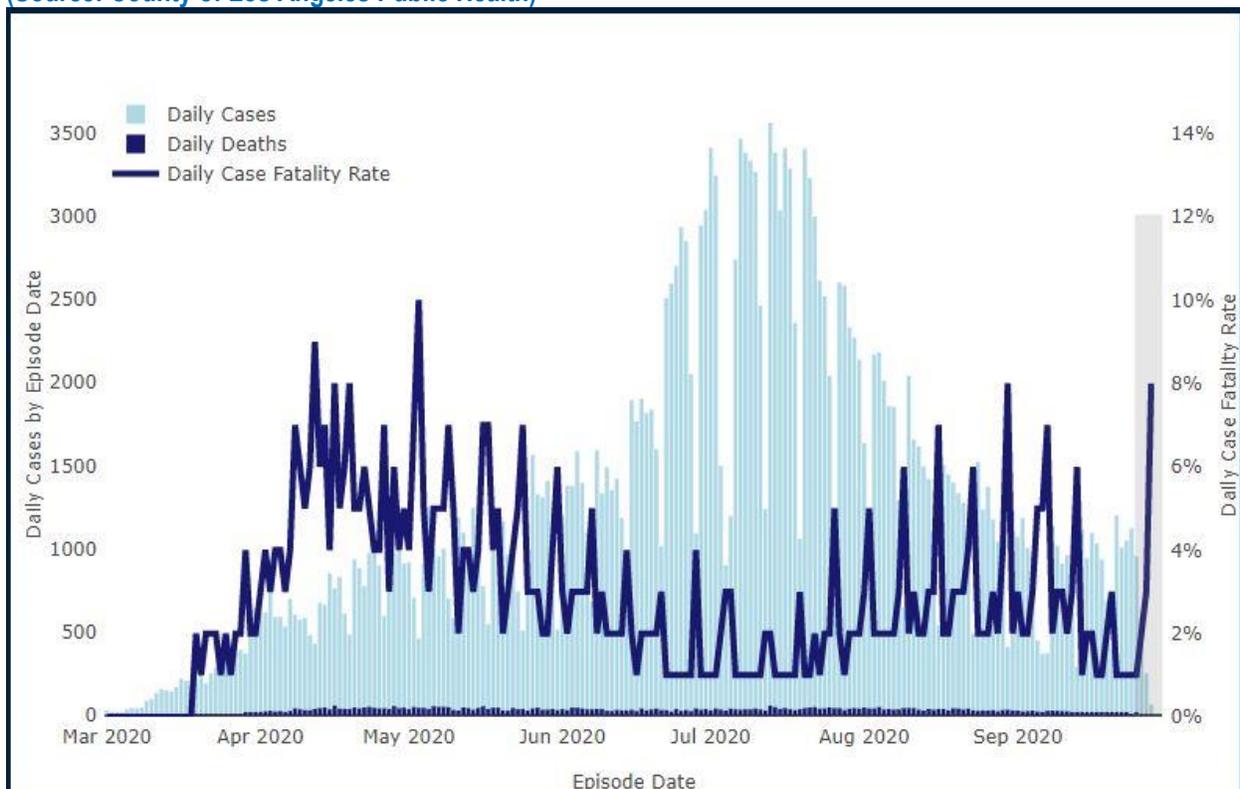
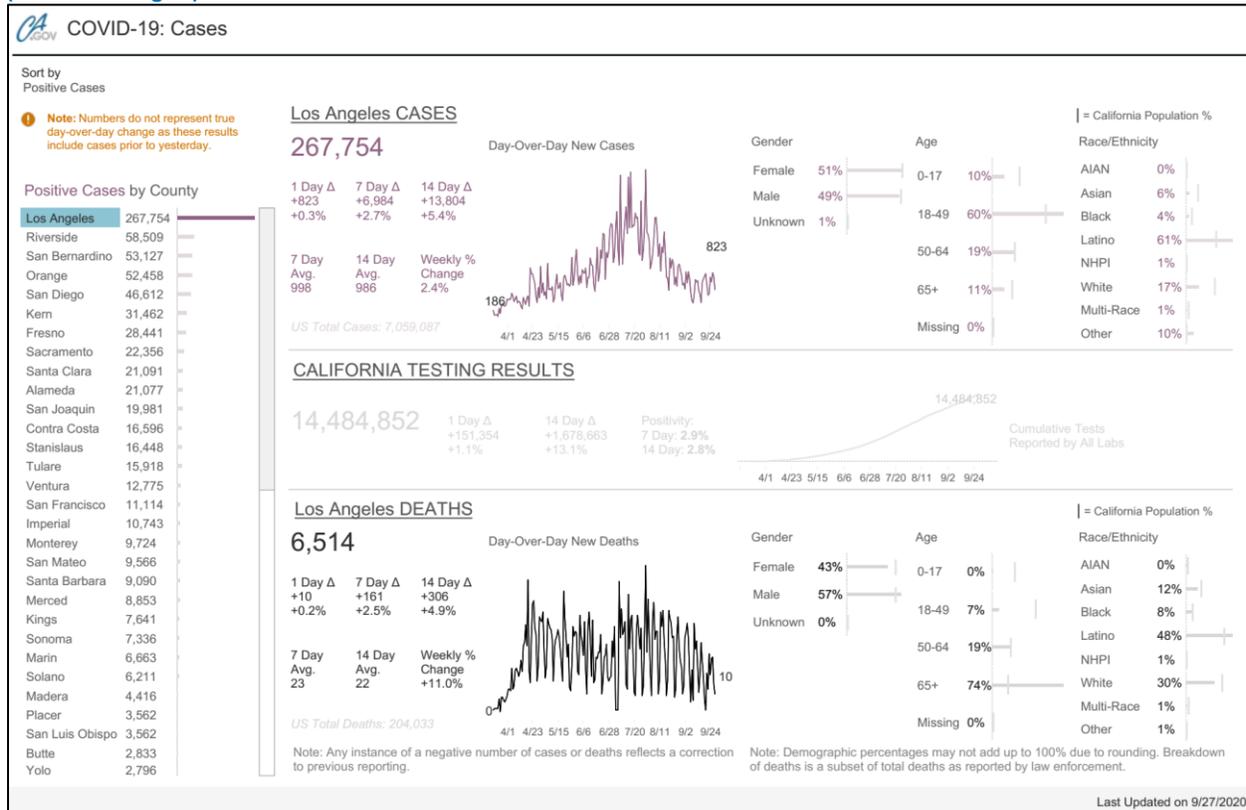




Chart: COVID-19 Cases in the State (Source: CA.gov)



**Table: Los Angeles County Influenza Surveillance Summary, 2018-19 Influenza Season
(Source: Influenza in Los Angeles County, County of Los Angeles Public Health, 2019)**

Influenza Type	2017-2018	2018-2019
Influenza	12,429	6,429
Respiratory Outbreak (Influenza)	43	25
Unknown Respiratory Outbreak	113	21
Deaths	289	125

Vector-Borne

The County of Los Angeles is susceptible to West Nile and Influenza. The regional conditions affecting the County are as follows:

**Table: Confirmed West Nile Infections and Fatalities in Los Angeles County by Year
(Source: Acute Communicable Disease Control, County of Los Angeles Public Health, 2019)**

Year	Infections	Hospitalizations	Deaths
2015	300	262	24
2016	153	131	6
2017	268	224	27
2018	47	37	3
2019	29	24	3

According to the County of Los Angeles Public Health Department, in October of 2018 an outbreak involving several cases of flea-borne typhus was discovered in downtown Los Angeles. Flea-



borne typhus is a disease that infected fleas can spread to humans, but it is not transmitted person-to-person. Bacteria (*Rickettsia typhi* and *R. felis*) found in infected fleas, and their feces, cause typhus. Fleas can come from many types of animals including cats, rats, and opossums. Although pets and animals do not get sick from typhus, typhus can cause high fever, chills, headache, and rash in people and can be treated with antibiotics. Places where there is an accumulation of trash that attract wild animals like feral cats, rats and opossums that may carry an infected flea may increase the risk of exposure. In Pasadena, 20 residents had confirmed cases, which is well above the expected one to five cases per year.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3a.

Q: Is there a description of each hazard's impacts on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Epidemic/Pandemic and Vector-Borne Diseases in the City of South El Monte** below.

Impact of Epidemic/Pandemic and Vector-Borne Diseases in the City of South El Monte

Based on the risk assessment, it is evident that Epidemic/Pandemic and Vector-Borne Diseases will continue to have potentially devastating economic impacts to the City of South El Monte. Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life
- ✓ Disruption of public infrastructure
- ✓ Significant economic impact (jobs, sales, tax revenue) upon the community
- ✓ Negative impact on commercial and residential property values
- ✓ Significant disruption to citizens as facilities, businesses, and public areas could be closed
- ✓ Significant decrease in convenience of shopping
- ✓ Business operations may be closed or limited to essential and critical needs only



PART III: MITIGATION STRATEGIES

Mitigation Strategies

Overview of Mitigation Strategy

As the cost of damage from disasters continues to increase nationwide, the City recognizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation Plans assist communities in reducing risk from natural hazards by identifying resources, information and strategies for risk reduction, while helping to guide and coordinate mitigation activities at City facilities.

The Plan provides a set of action items to reduce risk from hazards through education and outreach programs, and to foster the development of partnerships. Further, the plan provides for the implementation of preventative activities.

The resources and information within the Mitigation Plan:

1. Establish a basis for coordination and collaboration among agencies and the public in the City.
2. Identify and prioritize future mitigation projects.
3. Assist in meeting the requirements of federal assistance programs.

The Mitigation Plan is integrated with other plans including the City's Emergency Operations Plan and department-specific standard operating procedures.

Mitigation Measure Categories

Following is FEMA's list of mitigation categories. The activities identified by the Planning Team are consistent with the six broad categories of mitigation actions outlined in FEMA publication 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies*.

- ✓ **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- ✓ **Property Protection:** Actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- ✓ **Public Education and Awareness:** Actions to inform and educate citizens, property owners, and elected officials about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- ✓ **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses preserve or restore the functions of natural systems. Examples include sediment and



erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- ✓ **Emergency Services:** Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- ✓ **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, retaining walls, and safe rooms.

Q&A | ELEMENT C. MITIGATION STRATEGY | C3

Q: Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?

(Requirement §201.6(c)(3)(i))

A: See **Goals** below.

Q&A | ELEMENT D. MITIGATION STRATEGY | D3

Q: Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))

A: See **Mitigation Actions Matrix** below.

Goals

The Planning Team established goals based on the risk assessment that represent a long-term vision for hazard reduction and enhanced mitigation capabilities.

Each goal is supported by mitigation action items. The Planning Team developed these action items through its knowledge of the local area, risk assessment, review of past efforts, identification of mitigation activities, and qualitative analysis.

The five mitigation goals and descriptions are listed below.

Protect Life and Property

Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards.

Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.

Increase Public Awareness

Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards.

Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.

Protect Natural Systems

Support management and land use planning practices with hazard mitigation to protect life.



Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

Promote Partnerships and Implementation

Strengthen communication and coordinate participation with public agencies, non-profit organizations, business, and industry to support implementation.

Encourage leadership within City and public organizations to prioritize and implement local and regional hazard mitigation activities.

Enhance Emergency Services

Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

Coordinate and integrate hazard mitigation activities where appropriate, with emergency operations plans and procedures.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5a.

Q: Does the plan explain how the mitigation actions and projects will be prioritized (including cost benefit review)? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Benefit/Cost Ratings** and **Priority Rating** below.

Benefit/Cost Ratings

The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) grant program, and Building Resilient Infrastructure and Communities (BRIC). A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

High: Existing jurisdictional funding will not cover the cost of the action item so other sources of revenue would be required.

Medium: The action item could be funded through existing jurisdictional funding but would require budget modifications.

Low: The action item could be funded under existing jurisdictional funding.

Benefit ratings were defined as follows:

High: The action item will provide short-term and long-term impacts on the reduction of risk exposure to life and property.



Medium: The action item will have long-term impacts on the reduction of risk exposure to life and property.

Low: The action item will have only short-term impacts on the reduction of risk exposure to life and property.

Q&A | ELEMENT D. MITIGATION STRATEGY | D3

Q: Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))

A: See **Priority Rating** below.

Priority Rating

The Planning Team utilized the following Priority Rating method. Designations of “High”, “Medium”, and “Low” priority have been assigned to all of the action item using the following criteria:

Does the Action:

- solve the problem?
- address Vulnerability Assessment?
- reduce the exposure or vulnerability to the highest priority hazard?
- address multiple hazards?
- benefits equal or exceed costs?
- implement a goal, policy, or project identified in the General Plan or Capital Improvement Plan?

Can the Action:

- be implemented with existing funds?
- be implemented by existing state or federal grant programs?
- be completed within the 5-year life cycle of the LHMP?
- be implemented with currently available technologies?

Will the Action:

- be accepted by the community?
- be supported by community leaders?
- adversely impact segments of the population or neighborhoods?
- require a change in local ordinances or zoning laws?
- positive or neutral impact on the environment?
- comply with all local, state and federal environmental laws and regulations?

Is there:

- sufficient staffing to undertake the project?
- existing authority to undertake the project?

As mitigation action items were updated or written the Planning Team, representatives were provided worksheets for each of their assigned action items. Answers to the criteria above determined the priority according to the following scale.

- 1-6 = Low priority
- 7-12 = Medium priority
- 13-18 = High priority



Q&A | ELEMENT C. MITIGATION STRATEGY | C1b.

Q: Does the plan document each jurisdiction's ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C4a.

Q: Does the plan identify and analyze a comprehensive range (different alternatives) of specific mitigation actions and projects to reduce the impacts from hazards? (Requirement §201.6(c)(3)(ii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C4b.

Q: Does the plan identify mitigation actions for every hazard posing a threat to each participating jurisdiction? (Requirement §201.6(c)(3)(ii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C4c.

Q: Do the identified mitigation actions and projects have an emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5a.

Q: Does the plan explain how the mitigation actions and projects will be prioritized (including cost benefit review)? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5b.

Q: Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT D. MITIGATION STRATEGY | D1

Q: Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT D. MITIGATION STRATEGY | D2

Q: Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT D. MITIGATION STRATEGY | D3

Q: Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6c.

Q: The updated plan must explain how the jurisdiction(s) incorporated the mitigation plan, when appropriate, into other planning mechanisms as a demonstration of progress in local hazard mitigation efforts. (Requirement §201.6(c)(4)(ii))

A: See **Mitigation Actions Matrix** below.



Mitigation Actions Matrix

Following is **Table: Mitigation Actions Matrix** which identifies the existing and future mitigation activities developed by the Planning Team.

Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGF=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
Multi-Hazard Action Items													
MH-1 Integrate the goals and action items from the South El Monte Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.	Community Development (CD)	Ongoing	X	X	X	X	X	GF	H	L	L	Y	Revised
MH-2 When feasible, identify and pursue funding opportunities to develop and implement local mitigation activities.	GD	Ongoing											Deleted - duplicate
MH-3 When feasible, identify and pursue funding opportunities to develop and	CD, Community Services (CS), City Manager's Office (CM)	Ongoing						GF	H	L	H	Y	Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
implement local mitigation activities.													
MH-4 Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the City of South El Monte.	Hazard Mitigation Planning Team (PT)	Ongoing											Delete
MH-5 Develop inventories of at-risk City buildings and infrastructure.	CD, Public Safety (PS)	6 Months	X				X	GF, HMGP, PDM, BRIC	H	H	H	Y	Revised
MH-6 Strengthen emergency services preparedness and response by linking emergency services with natural hazard mitigation programs and enhancing public education on a city-wide scale.	Public Works Analyst	Ongoing	X	X	X	X	X	GF	H	L	H		Revised
MH-7 Develop, enhance, and implement education programs aimed at	Los Angeles County Fire Department	Ongoing	X	X	X	X	X	GF	H	L	H	Y	Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.	(LACoFD), Los Angeles County Sheriff's Department (LASD)												
MH-8 Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance.	GS	Ongoing											
MH-9 Develop a strategy plan for use in multi-hazard events.	GD	2-years											
MH-10 Promote public education to increase awareness of hazards and opportunities for mitigation.	LASD	Ongoing											
MH-11 Encourage interested individuals to participate in	LASD	Ongoing											



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
hazard mitigation planning and training activities.													
MH-12 Promote business mitigation awareness to increase knowledge of facilities managers.	Administration (A)	1-4 years	X	X	X	X	X	GF	H	L	H		Revised
MH-13 Monitor and publicize the effectiveness of mitigation initiatives implemented in the community.	GS	Ongoing											
MH-14 Educate the public about emergency sheltering and evacuation procedures.	American Red Cross (ARC)	Ongoing											
MH-15 Educate the public about hazards prevalent to their area.	CD	Ongoing											
MH-16 Develop and implement education and outreach programs to increase public awareness	GS	1-4 years											



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
of the risks associated with natural hazards.													
MH-17 Identify opportunities for partnering with citizens, private contractors, and other jurisdictions to increase availability of equipment and manpower for efficiency of response efforts.	CD	1-4 years											
MH-18 Coordinate the maintenance of emergency transportation routes through communication among the county roads department, neighboring jurisdictions, and Caltrans.	CD	Ongoing											
MH-19 Maintain and repair community's infrastructure to minimize the potential for system failure because of a disaster.	CD	Ongoing	X	X	X	X	X	GF, HMGP, PDM, BRIC, CDBG	H	H	H	Y	Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
MH-20 Determine continued protection measures to City owned/operated buildings; install plastic sheeting on roofs, cover exterior openings such as windows or doors, draining trapped water in ceilings or draining accumulated flood waters, temporary shoring to avoid imminent building collapse or damage.	CD	Ongoing											
MH-21 Conduct site plan review to determine new constructions, repair and reconstruction of damaged structures.	CD	Ongoing											
MH-22 Inventory alternative firefighting water sources and encourage the development of additional sources.	Public Works, LACoFD	1 year	X	X	X	X	X	GF	H	L	H	Y	Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
MH-23 Maintain display rack with the Emergency Preparedness Guidebook, FEMA's Are You Ready, FEMA's Emergency Management Guide, the Special Needs Survey, brochures on disaster supplies kits and plans, etc.	CD	2 years											
MH-24 Review and update all of the City's Emergency Operations Plan. Include participation of all Departments / Divisions.	CS	1-5 years	X	X	X	X	X	HMGP, PDM, BRIC	H	L	H		Revised
MH-25 Advertise the Department of Emergency Services website by ensuring its address is printed on all materials and publications.	A	1 year											
MH-26 Link City's website to County OES website.	A	Completed											Completed



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
MH-27 Utilize social media for the distribution and publication of hazard information.	CS	Ongoing	X	X	X	X	X	GF	H	L	H		Revised
MH-28 Create displays for children's programs that teach safety. Examples of information to be used would be similar to that on the FEMA for Kids CD, the Sparky Fire Safety Program, and/or the American Red Cross's Masters of Disasters program. These displays can be used in conjunction with "Safetyville", the library's children's section, etc.	LACoFD	1-4 years											
MH-29 Create opportunities for American Red Cross disaster courses to be held at City facilities.	CS	Ongoing											Deleted



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
MH-29 The American Red Cross will hold a variety of courses, including: CPR, Basic First Aid, Introduction to Disaster Services, Mass Care, Shelter Operations, babysitting, Healthcare Provider, pet first-aid and others at the American Red Cross Office and at other locations throughout the County.	CS												
MH-30 Adoption of the Los Angeles County Building Code.	CD	Ongoing	X	X	X	X	X	GF	H	L	H		Revised
MH-31 Develop plans for temporary protection of contents of City buildings to protect against further damage.	CD	Ongoing											Deleted
MH-32 Ensure compliance to rebuilding in conformance	CD	Ongoing											Deleted



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
with applicable codes, specifications, and standards.													
MH-33 Encourage and facilitate the adoption of building codes that provide protection for new construction and substantial renovations from the effects of identified hazards.	CD	1-5 years	X	X	X	X	X	GF	H	L	H	Y	Revised
MH-34 Coordinate and integrate natural hazard mitigation activities, where appropriate, with the Emergency Operations Plan.	CS	1-5 years	X	X	X	X	X	GF	H	L	H		Revised
MH-35 Encourage Caltrans to identify bridges at risk from flood or earthquake hazards, identify enhancements, and implement projects needed to reduce the risks.	CD	Ongoing	X	X	X	X	X	GF, HMGP, PDM, BRIC	H	H	H	Y	Revised, City has made efforts over the past 4 years to resolve with CalTrans



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
MH-36 Improve communication between DOT and city/county road departments to work together to prioritize and identify strategies to deal with road problems.	Los Angeles County Department of Public Works (DPW)	Ongoing											
MH-37 Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.	CD, ARC LA County Fire and Sheriff's Departments	Ongoing											
MH-38 Retrofit sheltering facilities owned by the City. Enhancement should include seismic retrofitting and other building code requirements, compliance with ADA (bathrooms, parking,	CD, PW	1-5 years	X	X	X	X	X	HMGP, PDM, BRIC	H	H	H		Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
sidewalks), generators, and kitchens.													
MH-39 Review priorities for restoration of the community's infrastructure and vital public facilities following a disaster.	CD, LACoFD, LASO, Engineering (E), Building & Safety Department (B&S)	As Needed											Deleted
MH-40 Provide technical assistance to help the community develop disaster management operations capabilities.	CS	1-4 years											Deleted
MH-41 Conduct a detailed vulnerability assessment in the future in order to accurately identify the extent of damages to vulnerable buildings, infrastructure, and critical facilities.	Hazard Mitigation Planning Team	Completed											Completed – HAZUS included in 2020 HMP update



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
Earthquake Mitigation Action Items													
EQ-1 Integrate new earthquake hazard mapping data for the City of South El Monte and improve technical analysis of earthquake hazards.	CD	Ongoing											
EQ-2 Identify funding sources for structural and nonstructural retrofitting of City structures that are identified as seismically vulnerable.	CD	Ongoing											
EQ-3 Seek funding to conduct seismic strength evaluations of critical and essential facilities in the City to identify vulnerabilities for mitigation of public infrastructure and critical facilities to meet current	CD	1-5 years	X	X	X	X	X	HMGP, PDM, BRIC	H	H	H	Y	Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
seismic standards. Priority: Aquatic Center													
Flood													
FLD-1 Continue to analyze each repetitive flood property within the City of South El Monte and identify feasible mitigation options.	CD	Ongoing											Deleted
FLD-2 Enhance data and mapping information within the City and identify and map flood-prone areas outside of designated floodplains.	CD	Ongoing											Deleted
FLD-3 Identify surface water drainage obstructions for all parts of the City.	CD	3 years	X	X	X	X	X	HMGP, PDM, BRIC	H	H	H	Y	Revised
FLD-4 Strengthen City's Public Works Department Storm Patrol Program with	General Services (GS) and Landscape Crews (LC)	3 years	X	X	X	X	X	GF, HMGP, PDM, BRIC	H	L-H	H		Revised



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
safety and other necessary equipment and training.													
Windstorms													
WND-1 Develop and implement programs to keep trees from threatening lives, property, and public infrastructure during windstorm events.	CS	Ongoing											Deleted hazard category
WND-2 Support and encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.	GD	Ongoing											Deleted hazard category
WND-3 Increase public awareness of windstorm threats.	A	Ongoing											Deleted hazard category
WND-4 Encourage development and enforcement of wind-	B&S	Ongoing											Deleted hazard category



Action Item	Coordinating Organization	Timeline	Plan Goals					Funding Source/Planning Mechanism: GF=General Fund, HMGP=Hazard Mitigation Grant Program, BRIC=Building Resilient Infrastructure and Communities, PDM=Pre-Disaster Mitigation	Benefit (L=Low, M=Med, H=High)	Cost (L=Low, M=Med, H=High)	Ranking (L=Low, M=Med, H=High)	Buildings & Infrastructure: Does the Action Item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	2020 Comments (Status – Completed, Revised, Deleted, New, and Deferred)
			Protect Life and Property	Public Awareness	Natural Systems	Partnerships and Implementation	Emergency Services						
resistant building siting and construction codes.													
WND-5 Develop strategies for debris management for severe storm events.	L, Street Crew	Ongoing											Deleted hazard category
Epidemic/Pandemic and Vector-Borne													



Plan Maintenance

The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process.

Local Mitigation Officer

The Planning Team that was involved in research and writing of the Plan will also be responsible for implementation. The Planning Team will be led by the Planning Team Chair Rene Salas who will be referred to as the Local Mitigation Officer. Under the direction of the Local Mitigation Officer, the Planning Team will take responsibility for plan maintenance and implementation. The Local Mitigation Officer will facilitate the Planning Team meetings and will assign tasks such as updating and presenting the Plan to the members of the Planning Team. Plan implementation and evaluation will be a shared responsibility among all of the Planning Team members. The Local Mitigation Officer will coordinate with City leadership to ensure funding for 5-year updates to Plan as required by FEMA.

The Planning Team will be responsible for coordinating implementation of plan action items and undertaking the formal review process. The Local Mitigation Officer will be authorized to make changes in assignments to the current Planning Team.

The Planning Team will meet no less than quarterly to monitor the status of the Plan. Meeting dates will be scheduled once the final Planning Team has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. The Local Mitigation Officer or designee will be responsible for contacting the Planning Team members and organizing the bi-annual meetings. The second meeting of the year will also include time to evaluate the effectiveness of the plan and the planning process.

Method and Scheduling of Plan Implementation

	Year 1	Year 2	Year 3	Year 4	Year 5
Monitoring	XXXX	XXXX	XXXX	XXXX	XXXX
Evaluating					
Internal Planning Team Evaluation	X	X	X	X	X
Cal OES and FEMA Evaluation					X
Updating					
					X

Monitoring and Implementing the Plan

Plan Adoption

The City Council will be responsible for adopting the Mitigation Plan. This governing body has the authority to promote sound public policy regarding hazards. Once the plan has been adopted, the Local Mitigation Officer will be responsible for submitting it to the State Hazard Mitigation Officer at California Office of Emergency Services (Cal OES). Cal OES will then submit the plan to the Federal Emergency Management Agency (FEMA) for review and approval. This review will address the requirements set forth in 44 C.F.R. Section 201.6 (Local Mitigation Plans). Upon acceptance by FEMA, the City will gain eligibility for Hazard Mitigation Grant Program funds.



Q&A | ELEMENT A: PLANNING PROCESS | A6a.

Q: Does the plan identify how, when, and by whom the plan will be **monitored** (how will implementation be tracked) over time? (Requirement §201.6(c)(4)(i))

A: See **Monitoring the Plan** below.

Monitoring the Plan

The Local Mitigation Officer will hold quarterly meetings with the Planning Team members in order to gather status updates on the mitigation action items. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. See the **Annual Implementation Report** discussed below which will be a valuable tool for the Planning Team to measure the success of the Hazard Mitigation Plan. The focus of the quarterly meetings will be on the progress and changes to the Mitigation Actions Matrix.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6a.

Q: Does the plan identify the local planning mechanisms where hazard mitigation information and/or actions may be incorporated? (Requirement §201.6(c)(4)(ii))

A: See **Implementation through Existing Program** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6b.

Q: Does the plan describe each community's process to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms? (Requirement §201.6(c)(4)(ii))

A: See **Implementation through Existing Programs** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6c.

Q: The updated plan must explain how the jurisdiction(s) incorporated the mitigation plan, when appropriate, into other planning mechanisms as a demonstration of progress in local hazard mitigation efforts. (Requirement §201.6(c)(4)(ii))

A: See **Implementation through Existing Programs** below.

Implementation through Existing Programs

The City addresses statewide planning goals and legislative requirements through the General Fund, Capital Projects, and Grants. The Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The City will implement recommended mitigation action items through existing programs and procedures.

The City is responsible for adhering to the State of California's Building and Safety Codes. In addition, the City may work with other agencies at the state level to review, develop and ensure Building and Safety Codes are adequate to mitigate or prevent damage by hazards. This is to ensure that life-safety criteria are met for new construction.

Some of the goals and action items in the Mitigation Plan will be achieved through activities recommended in the strategic and other budget documents. The various departments involved in developing the Plan will review it on a bi-annual basis. Upon review, the Planning Team will work with the departments to identify areas that the Mitigation Plan action items are consistent with the strategic and budget documents to ensure the Mitigation Plan goals and action items are implemented in a timely fashion.



Upon FEMA approval, the Planning Team will begin the process of incorporating risk information and mitigation action items into existing planning mechanisms including the General Fund (Operating Budget and Capital Projects - see Mitigation Actions Matrix for links between individual action items and associated planning mechanism). The quarterly meetings of the Planning Team will provide an opportunity for Planning Team members to report back on the progress made on the integration of mitigation planning elements into the City's planning documents and procedures.

Specifically, the Planning Team will utilize the updates of the following documents to implement the Mitigation Plan:

- ✓ Risk Assessment, City Profile, Planning Process (stakeholders) – Emergency Operations Plan
- ✓ Mitigation Actions Matrix – General Fund, Capital Projects, Grants

Quarterly Implementation Report

The Quarterly Implementation Matrix is the same as the Mitigation Actions Matrix but with a column added to track the status of each Action Item. Upon approval and adoption of the Plan, the entire Quarterly Implementation Report will be added to the Appendix of the Plan. Following is a view of the Quarterly Implementation Matrix:

Insert sample here

An equal part of the monitoring process is the need to maintain a strategic planning process which needs to include funding and organizational support. In that light, at least one year in advance of the FEMA-mandated 5-year submission of an update, the Local Mitigation Officer will convene the Planning Team to discuss funding and timing of the update planning process. On the fifth year of the planning cycles, the Planning Team will broaden its scope to include discussions and research on all of the sections within the Plan with particular attention given to goal achievement and public participation.

Economic Analysis of Mitigation Projects

FEMA's approach to identify the costs and benefits associated with hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis.

Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

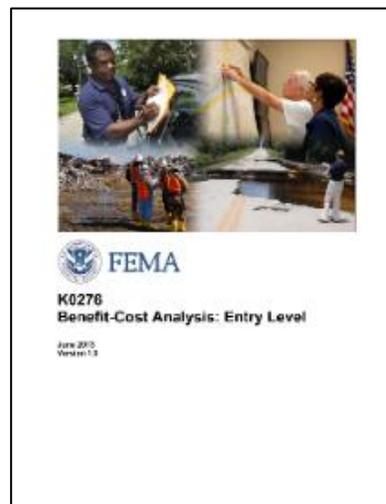
Given federal funding, the Planning Team will use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Planning Team will use other approaches to understand the costs and benefits of each action item and develop a prioritized list.



The “benefit”, “cost”, and overall “priority” of each mitigation action item was included in the Mitigation Actions Matrix located in Part III: Mitigation Strategies. A more technical assessment will be required in the event grant funding is pursued through the Hazard Mitigation Grant Program. FEMA Benefit-Cost Analysis Guidelines are discussed below.

FEMA Benefit-Cost Analysis Guidelines

The Stafford Act authorizes the President to establish a program to provide technical and financial assistance to state and local governments to assist in the implementation of hazard mitigation measures that are cost effective and designed to substantially reduce injuries, loss of life, hardship, or the risk of future damage and destruction of property. To evaluate proposed hazard mitigation projects prior to funding FEMA requires a Benefit-Cost Analysis (BCA) to validate cost effectiveness. BCA is the method by which the future benefits of a mitigation project are estimated and compared to its cost. The end result is a benefit-cost ratio (BCR), which is derived from a project’s total net benefits divided by its total project cost. The BCR is a numerical expression of the cost effectiveness of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs.



Although the preparation of a BCA is a technical process, FEMA has developed software, written materials, and training to support the effort and assist with estimating the expected future benefits over the useful life of a retrofit project. It is imperative to conduct a BCA early in the project development process to ensure the likelihood of meeting the cost-effective eligibility requirement in the Stafford Act.

The BCA program consists of guidelines, methodologies and software modules for a range of major natural hazards including:

- ✓ Flood (Riverine, Coastal Zone A, Coastal Zone V)
- ✓ Hurricane Wind
- ✓ Hurricane Safe Room
- ✓ Damage-Frequency Assessment
- ✓ Tornado Safe Room
- ✓ Earthquake
- ✓ Wildfire

The BCA program provides up to date program data, up to date default and standard values, user manuals and training. Overall, the program makes it easier for users and evaluators to conduct and review BCAs and to address multiple buildings and hazards in a single BCA module run.



Evaluating and Updating the Plan

Q&A | ELEMENT A: PLANNING PROCESS | A6b.

Q: Does the plan identify how, when, and by whom the plan will be **evaluated** (assessing the effectiveness of the plan at achieving stated purpose and goals) over time? (Requirement §201.6(c)(4)(i))

A: See **Evaluation** below.

Evaluation

At the conclusion of the Fourth Quarterly Implementation Meeting, the Local Mitigation Officer will lead a discussion with the Planning Team on the success (or failure) of the Mitigation Plan to meet the plan goals. Metrics used will include examining outcomes, number of action items implemented, identification of internal and external barriers to implementation. The results of that discussion will be added to the Evaluation portion of the Quarterly Implementation Report and inclusion in the 5-year update to the Plan. Efforts will be made immediately by the Local Mitigation Officer to address any failed plan goals.

Q&A | ELEMENT A: PLANNING PROCESS | A6c.

Q: Does the plan identify how, when, and by whom the plan will be **updated** during the 5-year cycle? (Requirement §201.6(c)(4)(i))

A: See **Formal Update Process** below.

Formal Update Process

As identified above, the Mitigation Actions Matrix will be monitored for status on a quarterly basis as well as an evaluation of the Plan's goals. The Local Mitigation Officer or designee will be responsible for contacting the Planning Team members and organizing the quarterly meetings. Planning Team members will also be responsible for participating in the formal update to the Plan every fifth year of the planning cycle.

The Planning Team will begin the update process with a review the goals and mitigation action items to determine their relevance to changing situations within the City as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Planning Team will also review the Plan's **Risk Assessment** portion of the Plan to determine if this information should be updated or modified, given any new available data. The **coordinating organizations** responsible for the various action items will report on the status of their projects, including the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised. Amending will be made to the Mitigation Actions Matrix and other sections in the Plan as deemed necessary by the Planning Team.



Q&A | ELEMENT A: PLANNING PROCESS | A5

Q: Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))

A: See **Continued Public Involvement** below.

Continued Public Involvement

The City is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the plan will be made available at City Hall and on the City's website. The existence and location of these copies will be publicized in City Newsletter and on the website. This site will also contain an email address and phone number where people can direct their comments and concerns. At the discretion of the Local Mitigation Officer, a public meeting may be held after the Fourth Quarterly Implementation Meeting. The meeting would provide the public a forum in which interested individuals and/or agencies could express their concerns, opinions, or ideas about the plan.

The Local Mitigation Officer will be responsible for using City resources to publicize any public meetings and always free to maintain public involvement through the public access channel, web page, and newspapers.



Attachments

FEMA Letter of Approval



City Council Adoption Resolution



Staff Report to City Council



Staff Report to Planning Commission



External Agencies Email Invite



Planning Team Agendas

Q&A | ELEMENT A: PLANNING PROCESS | A1a.

Q: Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)? (Requirement §201.6(c)(1))

A: See **Planning Team Agendas** below.

Agenda

South El Monte

Planning Team Meeting #1

1. Examine the purpose hazard mitigation.
2. Discuss the concepts and terms related to hazard mitigation planning.
3. Review the project schedule and public involvement during the plan writing phase.
4. Discuss initial results of Hazard Analysis and Rank Hazards.
5. Gather Updated Community Profile Data
 - a. History, Geography, Land Use, Demographics, CIP

Agenda

South El Monte

Planning Team Meeting #2

1. Review examples of hazard mitigation activities.
2. Update existing and develop new hazard mitigation action items.
 - a. Action Item
 - b. Goals Achieved
 - c. Coordinating Agency
 - d. Timeline
 - e. Funding Source
 - f. Planning Mechanisms
 - g. Benefit, Cost, and Priority Ranking
 - h. Does Action item Apply to Existing or Future Buildings or Infrastructure?



Agenda

South El Monte

Planning Team Meeting #3

- 1. Continue to Develop New Hazard Mitigation Action Items.**
 - i. Action Item**
 - j. Goals Achieved**
 - k. Coordinating Agency**
 - l. Timeline**
 - m. Funding Source**
 - n. Planning Mechanisms**
 - o. Benefit, Cost, and Priority Ranking**
 - p. Does action item apply to existing or future buildings or infrastructure?**
- 2. Discuss Strategy for and Schedule for Planning Commission.**

Agenda

South El Monte

Planning Team Meeting #4

- 1. Review First Draft Plan (distributed ahead of meeting to all members).**
- 2. Finalize Mitigation Action Items.**
- 3. Discuss Strategy for Distributing Second Draft Plan to External Agencies and General Public. Upon return of FEMA Approval Pending Adoption, Final Draft Plan will be set for a public meeting with the City Council for Plan adoption.**



Planning Team Sign-In Sheets

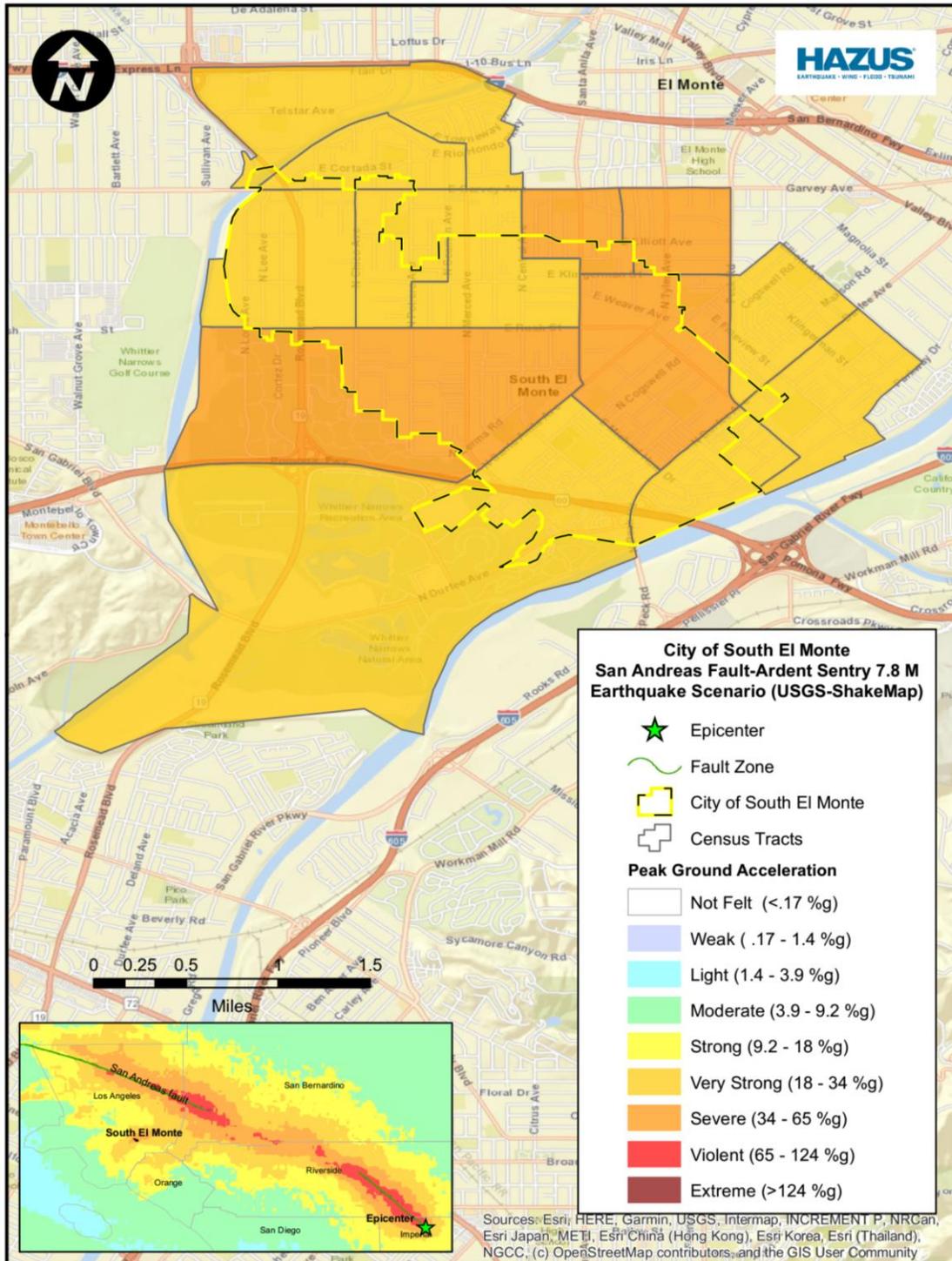
Q&A | ELEMENT A: PLANNING PROCESS | A1a.

Q: Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)? (Requirement §201.6(c)(1))

A: See **Planning Team Sign-In Sheets** below.



HAZUS Map – San Andreas M7.8





HAZUS Report - San Andreas M7.8



Hazus-MH: Earthquake Global Risk Report

Region Name: S_EI_Monte

Earthquake Scenario: M7.8-Ardent Sentry 2015 Scenario v1

Print Date: September 26, 2020

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.



FEMA

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General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7.69 square miles and contains 13 census tracts. There are over 10 thousand households in the region which has a total population of 48,374 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 10 thousand buildings in the region with a total building replacement value (excluding contents) of 4,331 (millions of dollars). Approximately 88.00 % of the buildings (and 57.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,462 and 367 (millions of dollars) , respectively.



Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 10 thousand buildings in the region which have an aggregate total replacement value of 4,331 (millions of dollars). Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 117 beds. There are 17 schools, 1 fire stations, 0 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 14 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,829.00 (millions of dollars). This inventory includes over 80.78 miles of highways, 13 bridges, 332.43 miles of pipes.



Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	13	87.7481
	Segments	124	1173.1648
	Tunnels	0	0.0000
	Subtotal		1260.9129
Railways	Bridges	2	11.4413
	Facilities	0	0.0000
	Segments	41	101.4307
	Tunnels	0	0.0000
	Subtotal		112.8720
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	3	88.3146
	Tunnels	0	0.0000
	Subtotal		88.3146
Bus	Facilities	0	0.0000
	Subtotal		0.0000
Ferry	Facilities	0	0.0000
	Subtotal		0.0000
Port	Facilities	0	0.0000
	Subtotal		0.0000
Airport	Facilities	0	0.0000
	Runways	0	0.0000
	Subtotal		0.0000
		Total	1,462.10



FEMA

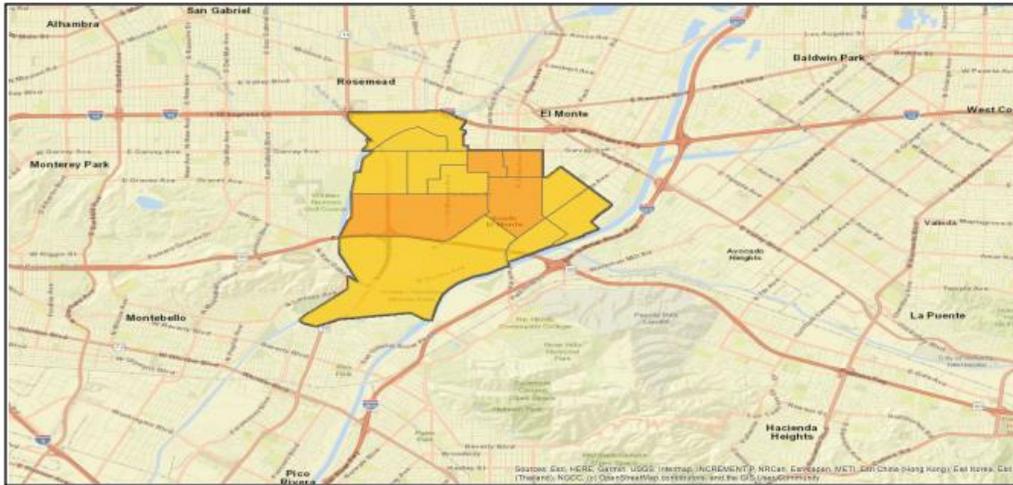
Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	6.2394
	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		6.2394
Waste Water	Distribution Lines	NA	3.7436
	Facilities	2	327.2234
	Pipelines	0	0.0000
	Subtotal		330.9670
Natural Gas	Distribution Lines	NA	2.4958
	Facilities	0	0.0000
	Pipelines	2	28.2885
	Subtotal		30.7843
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		0.0000
Electrical Power	Facilities	0	0.0000
	Subtotal		0.0000
Communication	Facilities	0	0.0000
	Subtotal		0.0000
	Total		368.00



Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	M7.8-Ardent Sentry 2015 Scenario v1
Type of Earthquake	
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	0.00
Latitude of Epicenter	0.00
Earthquake Magnitude	7.80
Depth (km)	0.00
Rupture Length (Km)	0.00
Rupture Orientation (degrees)	0.00
Attenuation Function	



Direct Earthquake Damage

Building Damage

Hazus estimates that about 999 buildings will be at least moderately damaged. This is over 9.00 % of the buildings in the region. There are an estimated 88 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

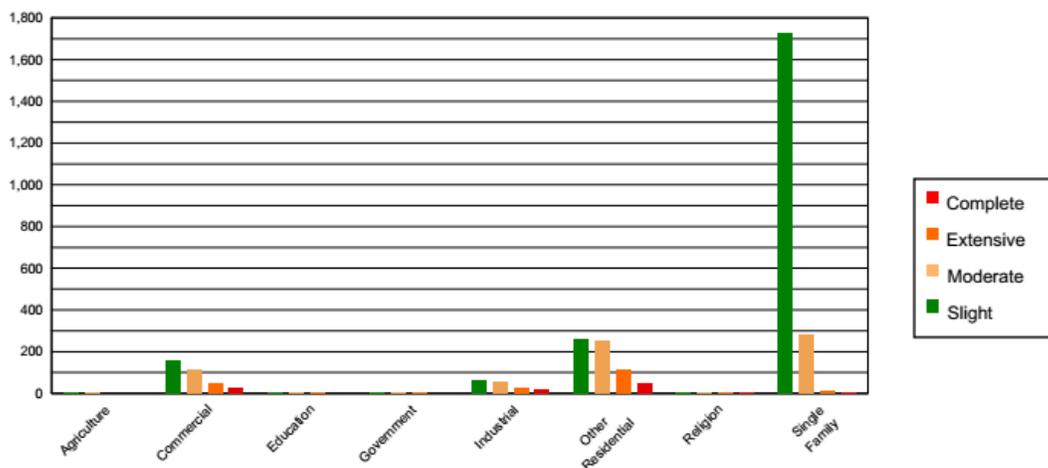


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	10.18	0.14	3.06	0.14	1.64	0.23	0.62	0.31	0.49	0.55
Commercial	495.72	6.67	154.34	6.95	117.21	16.49	47.52	23.77	22.21	25.11
Education	14.73	0.20	3.99	0.18	2.11	0.30	0.81	0.41	0.35	0.40
Government	7.84	0.11	2.40	0.11	1.90	0.27	1.10	0.55	0.76	0.86
Industrial	187.75	2.53	64.00	2.88	53.60	7.54	26.01	13.01	16.64	18.81
Other Residential	444.47	5.98	257.37	11.59	251.32	35.35	112.60	56.31	44.23	50.00
Religion	24.41	0.33	7.06	0.32	4.35	0.61	2.01	1.00	1.16	1.31
Single Family	6248.26	84.06	1729.02	77.84	278.82	39.22	9.27	4.64	2.63	2.97
Total	7,433		2,221		711		200		88	



Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	6548.75	88.10	1828.85	82.33	306.77	43.15	16.93	8.47	6.97	7.88
Steel	136.88	1.84	54.26	2.44	51.53	7.25	25.98	13.00	19.41	21.94
Concrete	123.68	1.66	40.06	1.80	27.68	3.89	17.37	8.69	12.26	13.86
Precast	171.60	2.31	55.81	2.51	46.00	6.47	15.57	7.79	4.11	4.65
RM	255.69	3.44	47.68	2.15	37.07	5.21	12.67	6.34	2.42	2.74
URM	38.50	0.52	15.78	0.71	10.78	1.52	3.03	1.52	0.70	0.79
MH	158.27	2.13	178.81	8.05	231.15	32.51	108.39	54.21	42.59	48.14
Total	7,433		2,221		711		200		88	

*Note:
 RM Reinforced Masonry
 URM Unreinforced Masonry
 MH Manufactured Housing



Essential Facility Damage

Before the earthquake, the region had 117 hospital beds available for use. On the day of the earthquake, the model estimates that only 62 hospital beds (53.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 76.00% of the beds will be back in service. By 30 days, 94.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	0	0	1
Schools	17	0	0	13
EOCs	0	0	0	0
PoliceStations	0	0	0	0
FireStations	1	0	0	0



Transportation Lifeline Damage

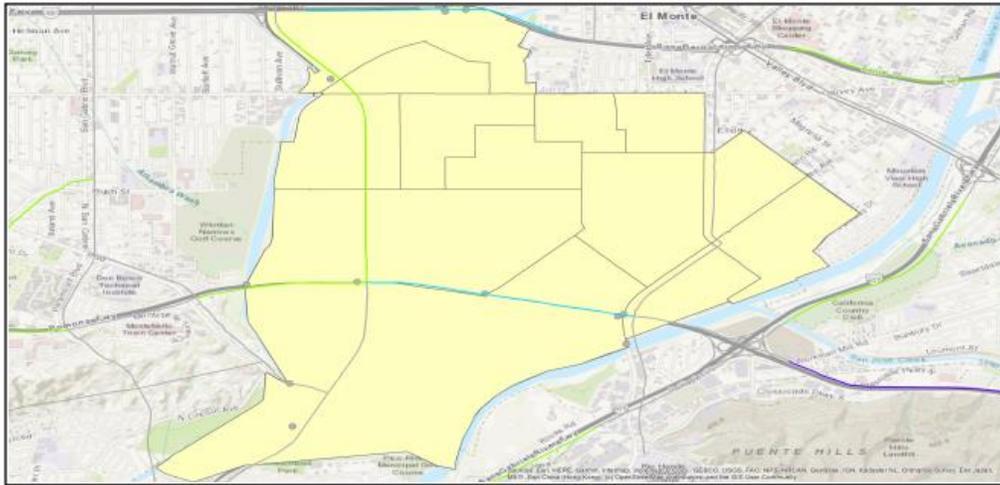




Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	124	0	0	114	114
	Bridges	13	0	0	13	13
	Tunnels	0	0	0	0	0
Railways	Segments	41	0	0	32	32
	Bridges	2	0	0	2	2
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	3	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.



Table 7 : Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	2	0	0	2	2
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	194	2608	652
Waste Water	116	1310	328
Natural Gas	22	22	5
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	10,889	10,886	10,885	10,881	0	0
Electric Power		0	0	0	0	0



Induced Earthquake Damage

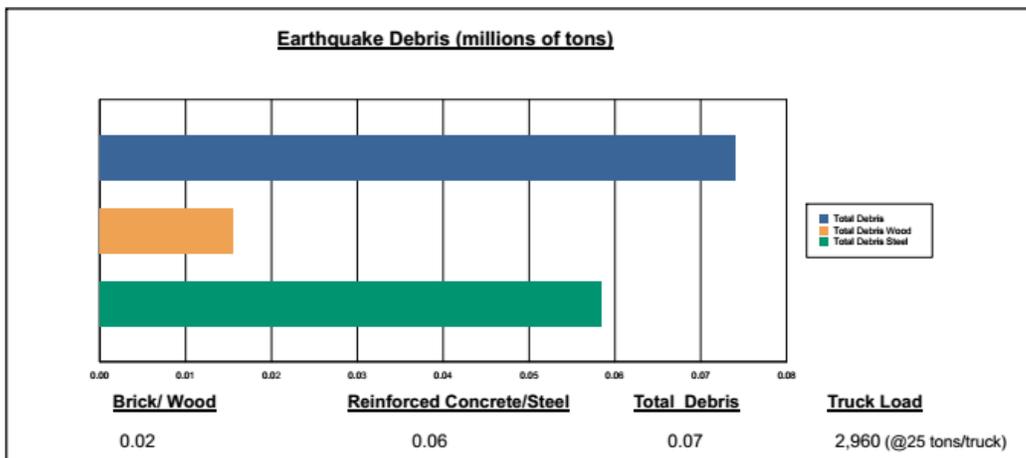
Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.01 sq. mi 0.13 % of the region's total area.) The model also estimates that the fires will displace about 151 people and burn about 9 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 74,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 21.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 2,960 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

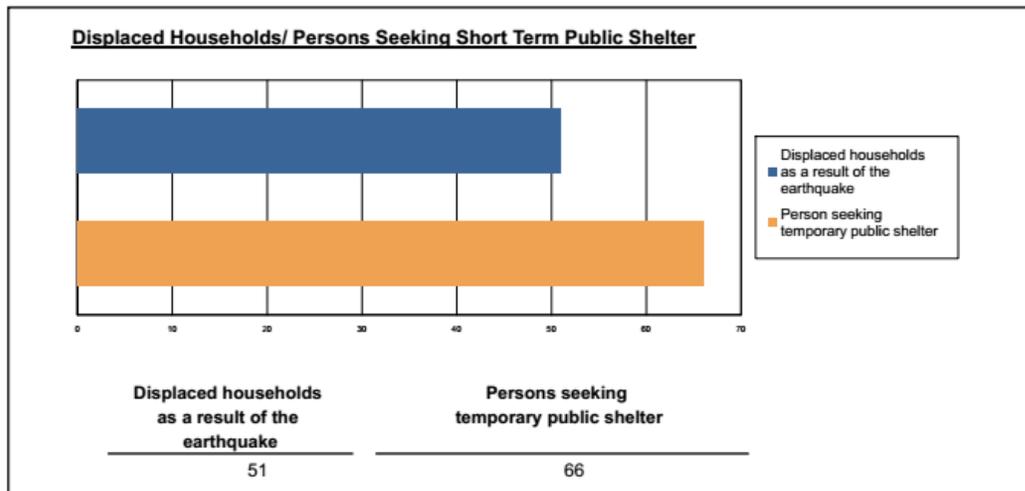




Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 51 households to be displaced due to the earthquake. Of these, 66 people (out of a total population of 48,374) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake



Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.83	0.22	0.03	0.07
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	2.77	0.74	0.11	0.22
	Other-Residential	20.06	4.40	0.46	0.85
	Single Family	8.30	0.67	0.03	0.05
	Total	32	6	1	1
	2 PM	Commercial	50.26	13.22	2.05
Commuting		0.00	0.00	0.00	0.00
Educational		21.52	6.11	1.00	1.97
Hotels		0.00	0.00	0.00	0.00
Industrial		20.44	5.46	0.83	1.61
Other-Residential		4.43	0.97	0.10	0.19
Single Family		1.82	0.15	0.01	0.01
Total		98	26	4	8
5 PM		Commercial	36.39	9.52	1.48
	Commuting	0.00	0.00	0.00	0.00
	Educational	1.78	0.50	0.08	0.16
	Hotels	0.00	0.00	0.00	0.00
	Industrial	12.77	3.41	0.52	1.01
	Other-Residential	7.34	1.62	0.17	0.32
	Single Family	3.09	0.26	0.01	0.02
	Total	61	15	2	4



Economic Loss

The total economic loss estimated for the earthquake is 372.42 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.



Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 327.06 (millions of dollars); 13 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 23 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

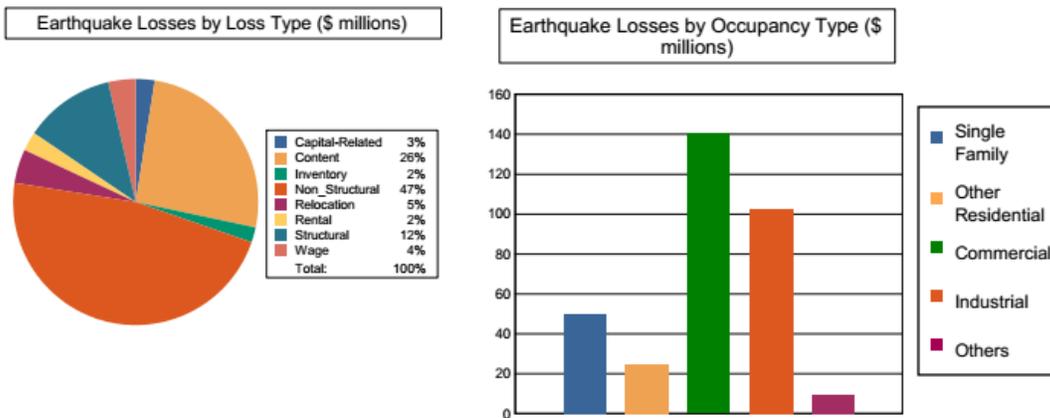


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.4253	9.3465	1.4990	0.2402	11.5110
	Capital-Related	0.0000	0.1804	7.2326	0.9379	0.0529	8.4038
	Rental	0.5550	0.7593	5.5383	0.5561	0.1554	7.5641
	Relocation	1.8110	1.2264	8.9181	2.4841	0.9173	15.3569
	Subtotal	2.3660	2.5914	31.0355	5.4771	1.3658	42.8358
Capital Stock Losses							
	Structural	4.0368	2.8545	19.9064	11.3869	1.3629	39.5475
	Non_Structural	29.9845	15.1909	57.0962	47.0675	4.4782	153.8173
	Content	13.6571	4.1173	31.1144	33.1640	2.3708	84.4236
	Inventory	0.0000	0.0000	1.1770	5.2211	0.0327	6.4308
	Subtotal	47.6784	22.1627	109.2940	96.8395	8.2446	284.2192
	Total	50.04	24.75	140.33	102.32	9.61	327.06



Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1173.1648	0.0000	0.00
	Bridges	87.7481	3.3803	3.85
	Tunnels	0.0000	0.0000	0.00
	Subtotal	1260.9129	3.3803	
Railways	Segments	101.4307	0.0000	0.00
	Bridges	11.4413	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	112.8720	0.0000	
Light Rail	Segments	88.3146	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	88.3146	0.0000	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	1,462.10	3.38	



Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	6.2394	11.7377	188.12
	Subtotal	6.2394	11.7377	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	327.2234	22.3314	6.82
	Distribution Lines	3.7436	5.8962	157.50
	Subtotal	330.9670	28.2276	
Natural Gas	Pipelines	28.2885	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	2.4958	2.0200	80.94
	Subtotal	30.7843	2.0200	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Communication	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	367.99	41.99	



Appendix A: County Listing for the Region

Los Angeles, CA

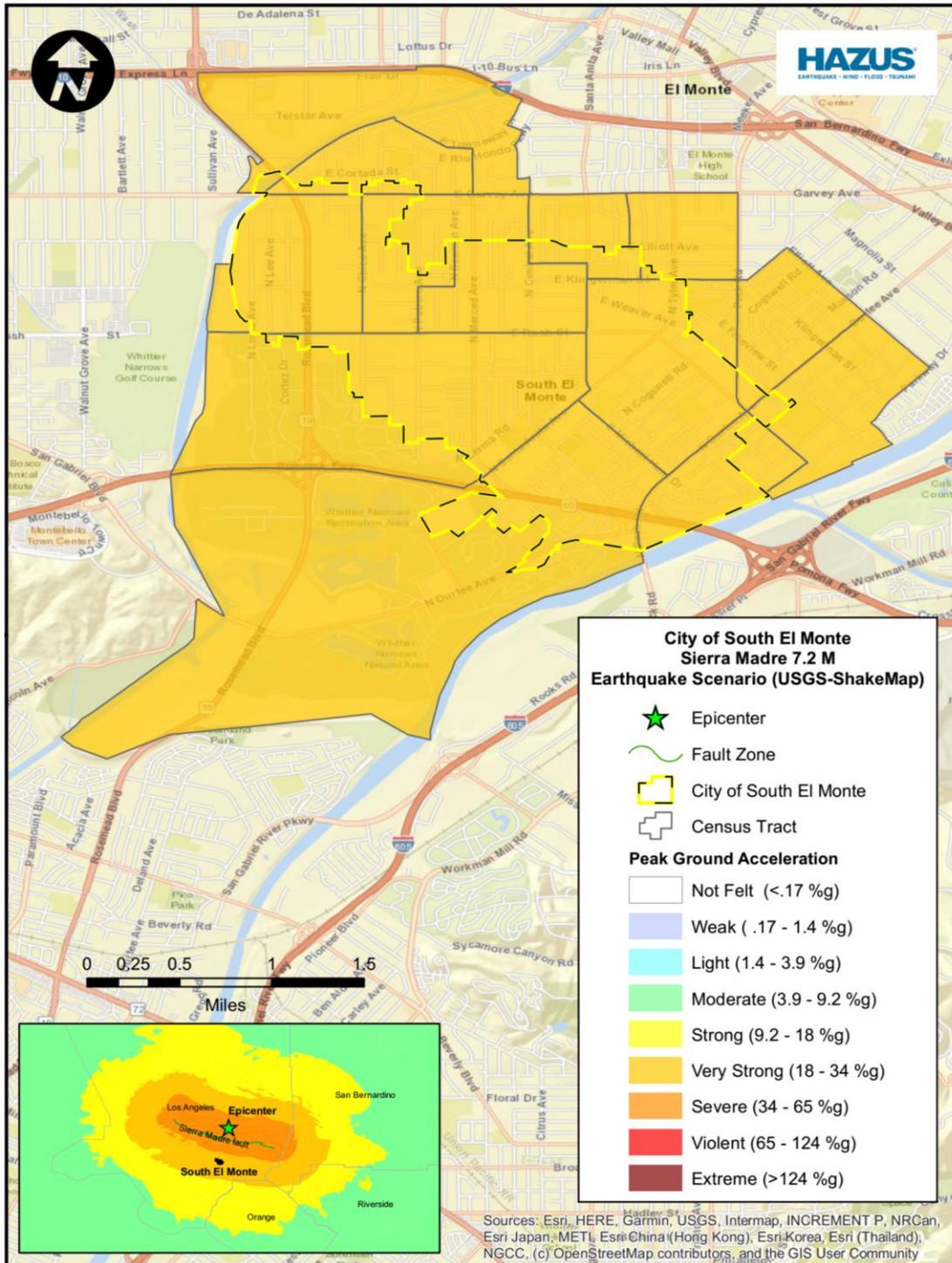


Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
California	Los Angeles	48,374	2,458	1,872	4,331
Total Region		48,374	2,458	1,872	4,331



HAZUS Map - Sierra Madre M7.2





HAZUS Report - Sierra Madre M7.2



Hazus-MH: Earthquake Global Risk Report

Region Name: S_EI_Monte

Earthquake Scenario: M7.2-Sierra Madre v11

Print Date: September 26, 2020

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.



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General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7.69 square miles and contains 13 census tracts. There are over 10 thousand households in the region which has a total population of 48,374 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 10 thousand buildings in the region with a total building replacement value (excluding contents) of 4,331 (millions of dollars). Approximately 88.00 % of the buildings (and 57.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,462 and 367 (millions of dollars) , respectively.



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Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 10 thousand buildings in the region which have an aggregate total replacement value of 4,331 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 117 beds. There are 17 schools, 1 fire stations, 0 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 14 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,829.00 (millions of dollars). This inventory includes over 80.78 miles of highways, 13 bridges, 332.43 miles of pipes.



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Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	13	87.7481
	Segments	124	1173.1648
	Tunnels	0	0.0000
	Subtotal		1260.9129
Railways	Bridges	2	11.4413
	Facilities	0	0.0000
	Segments	41	101.4307
	Tunnels	0	0.0000
	Subtotal		112.8720
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	3	88.3146
	Tunnels	0	0.0000
	Subtotal		88.3146
Bus	Facilities	0	0.0000
	Subtotal		0.0000
Ferry	Facilities	0	0.0000
	Subtotal		0.0000
Port	Facilities	0	0.0000
	Subtotal		0.0000
Airport	Facilities	0	0.0000
	Runways	0	0.0000
	Subtotal		0.0000
		Total	1,462.10



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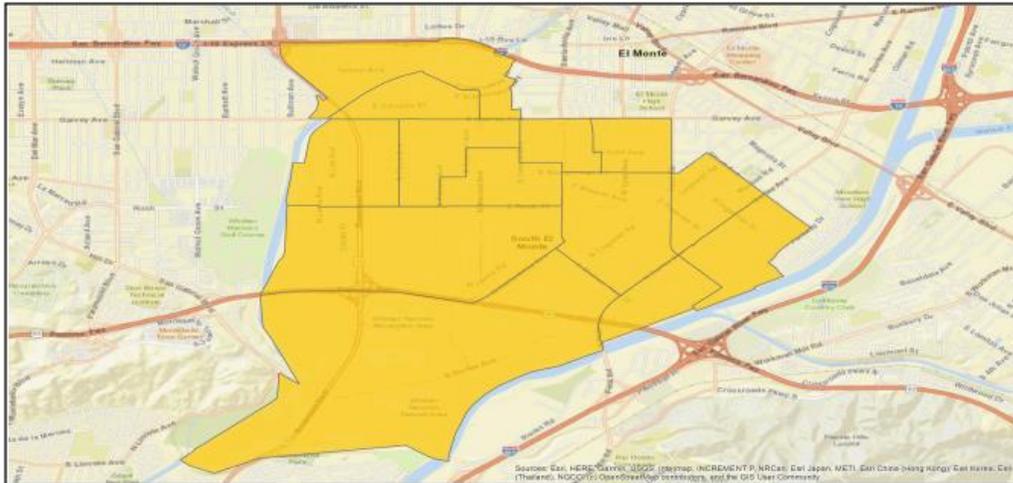
Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	6.2394
	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		6.2394
Waste Water	Distribution Lines	NA	3.7436
	Facilities	2	327.2234
	Pipelines	0	0.0000
	Subtotal		330.9670
Natural Gas	Distribution Lines	NA	2.4958
	Facilities	0	0.0000
	Pipelines	2	28.2885
	Subtotal		30.7843
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		0.0000
Electrical Power	Facilities	0	0.0000
	Subtotal		0.0000
Communication	Facilities	0	0.0000
	Subtotal		0.0000
		Total	368.00



Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	M7.2-Sierra Madre v11
Type of Earthquake	
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	0.00
Latitude of Epicenter	0.00
Earthquake Magnitude	7.16
Depth (km)	0.00
Rupture Length (Km)	0.00
Rupture Orientation (degrees)	0.00
Attenuation Function	



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Direct Earthquake Damage

Building Damage

Hazus estimates that about 2,007 buildings will be at least moderately damaged. This is over 19.00 % of the buildings in the region. There are an estimated 84 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

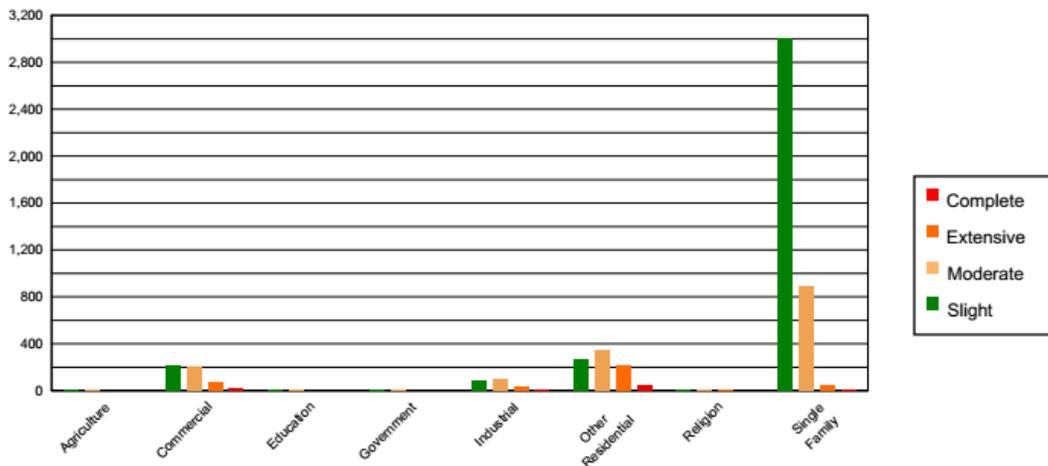


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	6.73	0.13	4.52	0.13	3.31	0.21	1.14	0.30	0.30	0.36
Commercial	325.27	6.44	215.04	5.98	205.19	13.31	75.71	19.88	15.79	18.79
Education	10.27	0.20	6.14	0.17	4.11	0.27	1.26	0.33	0.22	0.26
Government	5.52	0.11	3.50	0.10	3.31	0.21	1.36	0.36	0.31	0.37
Industrial	124.15	2.46	85.63	2.38	92.48	6.00	36.90	9.69	8.85	10.53
Other Residential	249.31	4.94	268.17	7.46	337.54	21.89	209.81	55.08	45.17	53.76
Religion	16.68	0.33	10.48	0.29	8.18	0.53	3.01	0.79	0.65	0.78
Single Family	4313.39	85.39	3002.19	83.49	887.98	57.58	51.70	13.57	12.74	15.16
Total	5,051		3,596		1,542		381		84	



Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	4519.33	89.47	3171.98	88.22	946.89	61.40	55.55	14.58	14.54	17.30
Steel	91.26	1.81	66.60	1.85	86.60	5.62	34.96	9.18	8.64	10.28
Concrete	85.96	1.70	59.95	1.67	49.39	3.20	21.06	5.53	4.68	5.57
Precast	102.43	2.03	71.34	1.98	81.81	5.31	31.44	8.25	6.06	7.21
RM	176.92	3.50	72.68	2.02	72.99	4.73	29.31	7.69	3.62	4.31
URM	20.30	0.40	17.93	0.50	19.06	1.24	8.30	2.18	3.21	3.82
MH	55.11	1.09	135.18	3.76	285.37	18.51	200.28	52.58	43.27	51.50
Total	5,051		3,596		1,542		381		84	

*Note:
 RM Reinforced Masonry
 URM Unreinforced Masonry
 MH Manufactured Housing



Essential Facility Damage

Before the earthquake, the region had 117 hospital beds available for use. On the day of the earthquake, the model estimates that only 24 hospital beds (21.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 44.00% of the beds will be back in service. By 30 days, 76.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	1	0	0
Schools	17	15	0	1
EOCs	0	0	0	0
PoliceStations	0	0	0	0
FireStations	1	1	0	0



Transportation Lifeline Damage

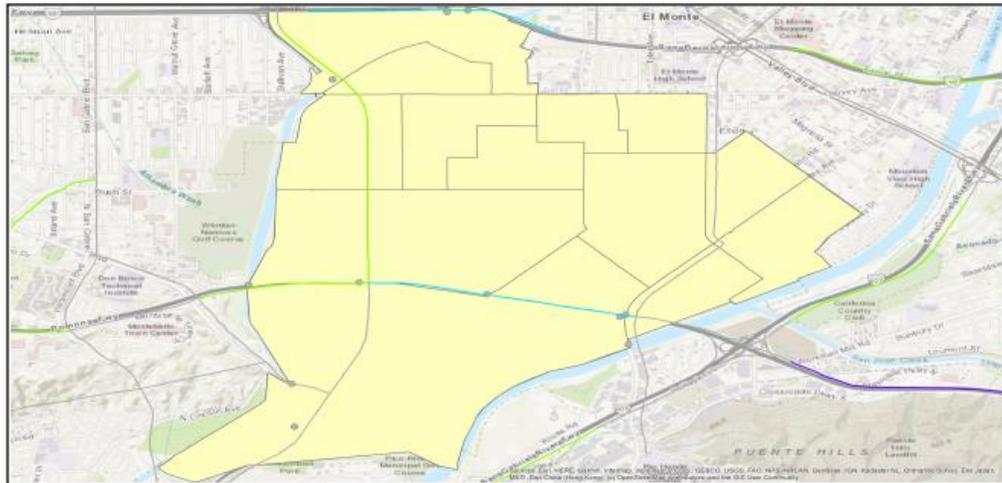




Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	124	0	0	114	114
	Bridges	13	0	0	13	13
	Tunnels	0	0	0	0	0
Railways	Segments	41	0	0	32	32
	Bridges	2	0	0	2	2
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	3	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.



Table 7 : Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	2	0	0	0	2
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	194	55	14
Waste Water	116	28	7
Natural Gas	22	3	1
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	10,889	0	0	0	0	0
Electric Power		0	0	0	0	0



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Induced Earthquake Damage

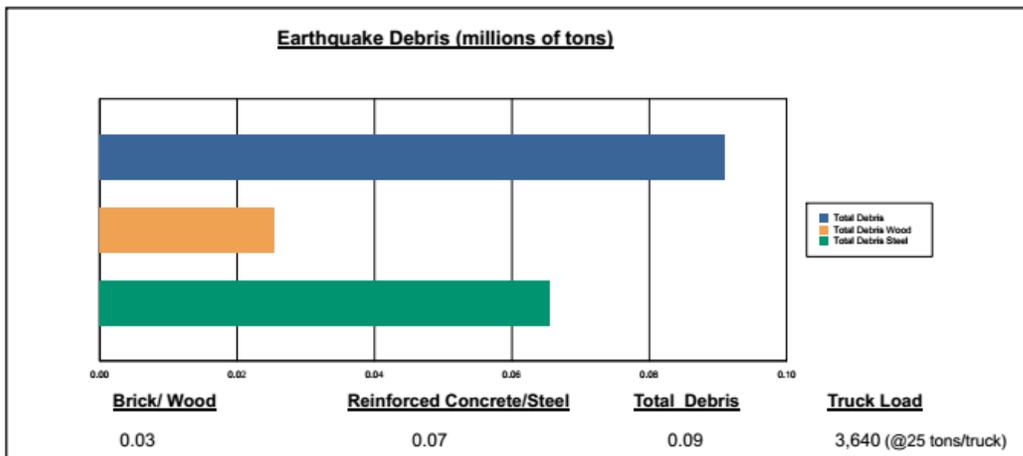
Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.01 sq. mi 0.13 % of the region's total area.) The model also estimates that the fires will displace about 150 people and burn about 9 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 91,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 28.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 3,640 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

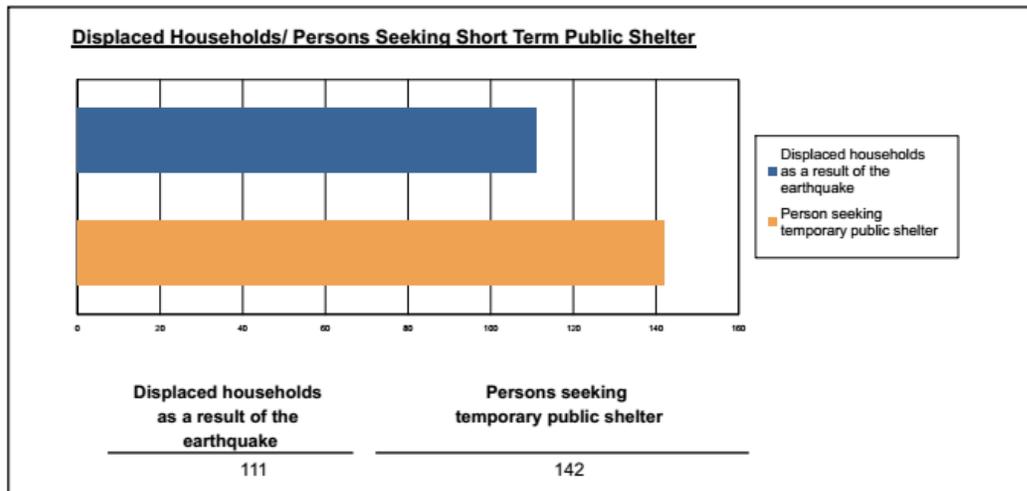




Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 111 households to be displaced due to the earthquake. Of these, 142 people (out of a total population of 48,374) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake



Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.93	0.21	0.03	0.06
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	2.55	0.58	0.08	0.16
	Other-Residential	25.80	4.79	0.39	0.71
	Single Family	22.60	2.43	0.09	0.15
	Total	52	8	1	1
2 PM	Commercial	56.52	12.91	1.85	3.62
	Commuting	0.00	0.00	0.00	0.00
	Educational	16.86	3.74	0.53	1.03
	Hotels	0.00	0.00	0.00	0.00
	Industrial	18.74	4.26	0.59	1.14
	Other-Residential	5.69	1.06	0.09	0.16
	Single Family	5.01	0.55	0.02	0.03
	Total	103	23	3	6
5 PM	Commercial	41.02	9.36	1.34	2.60
	Commuting	0.00	0.00	0.00	0.00
	Educational	1.50	0.33	0.05	0.09
	Hotels	0.00	0.00	0.00	0.00
	Industrial	11.71	2.66	0.37	0.71
	Other-Residential	9.45	1.77	0.15	0.27
	Single Family	8.58	0.95	0.04	0.06
	Total	72	15	2	4



Economic Loss

The total economic loss estimated for the earthquake is 404.94 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.



Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 371.79 (millions of dollars); 16 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 34 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

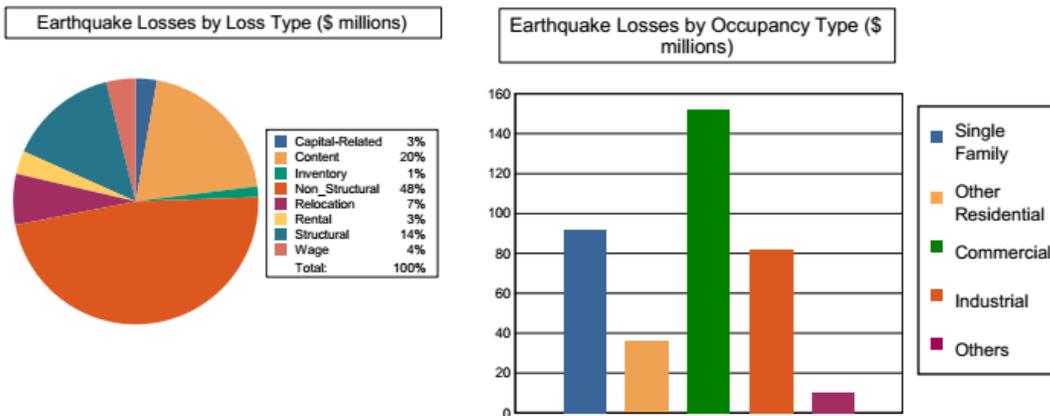
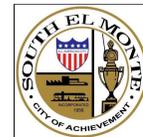


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	0.7197	11.4129	1.5800	0.2839	13.9965
	Capital-Related	0.0000	0.3052	8.8588	0.9804	0.0673	10.2117
	Rental	1.7447	1.4320	7.6527	0.6423	0.1773	11.6490
	Relocation	6.1759	2.0407	12.2634	3.1382	1.1594	24.7776
	Subtotal	7.9206	4.4976	40.1878	6.3409	1.6879	60.6348
Capital Stock Losses							
	Structural	10.6297	4.5615	25.3354	11.5083	1.6271	53.6620
	Non_Structural	55.8320	22.0752	58.3864	36.1384	4.5746	177.0066
	Content	17.2991	4.7237	27.2857	24.3223	2.1020	75.7328
	Inventory	0.0000	0.0000	1.0715	3.6513	0.0296	4.7524
	Subtotal	83.7608	31.3604	112.0790	75.6203	8.3333	311.1538
	Total	91.68	35.86	152.27	81.96	10.02	371.79



Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1173.1648	0.0000	0.00
	Bridges	87.7481	1.1666	1.33
	Tunnels	0.0000	0.0000	0.00
	Subtotal	1260.9129	1.1666	
Railways	Segments	101.4307	0.0000	0.00
	Bridges	11.4413	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	112.8720	0.0000	
Light Rail	Segments	88.3146	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	88.3146	0.0000	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	1,462.10	1.17	



Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	6.2394	0.2478	3.97
	Subtotal	6.2394	0.2478	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	327.2234	31.4527	9.61
	Distribution Lines	3.7436	0.1245	3.33
	Subtotal	330.9670	31.5772	
Natural Gas	Pipelines	28.2885	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	2.4958	0.1612	6.46
	Subtotal	30.7843	0.1612	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Communication	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	367.99	31.99	



Appendix A: County Listing for the Region

Los Angeles, CA

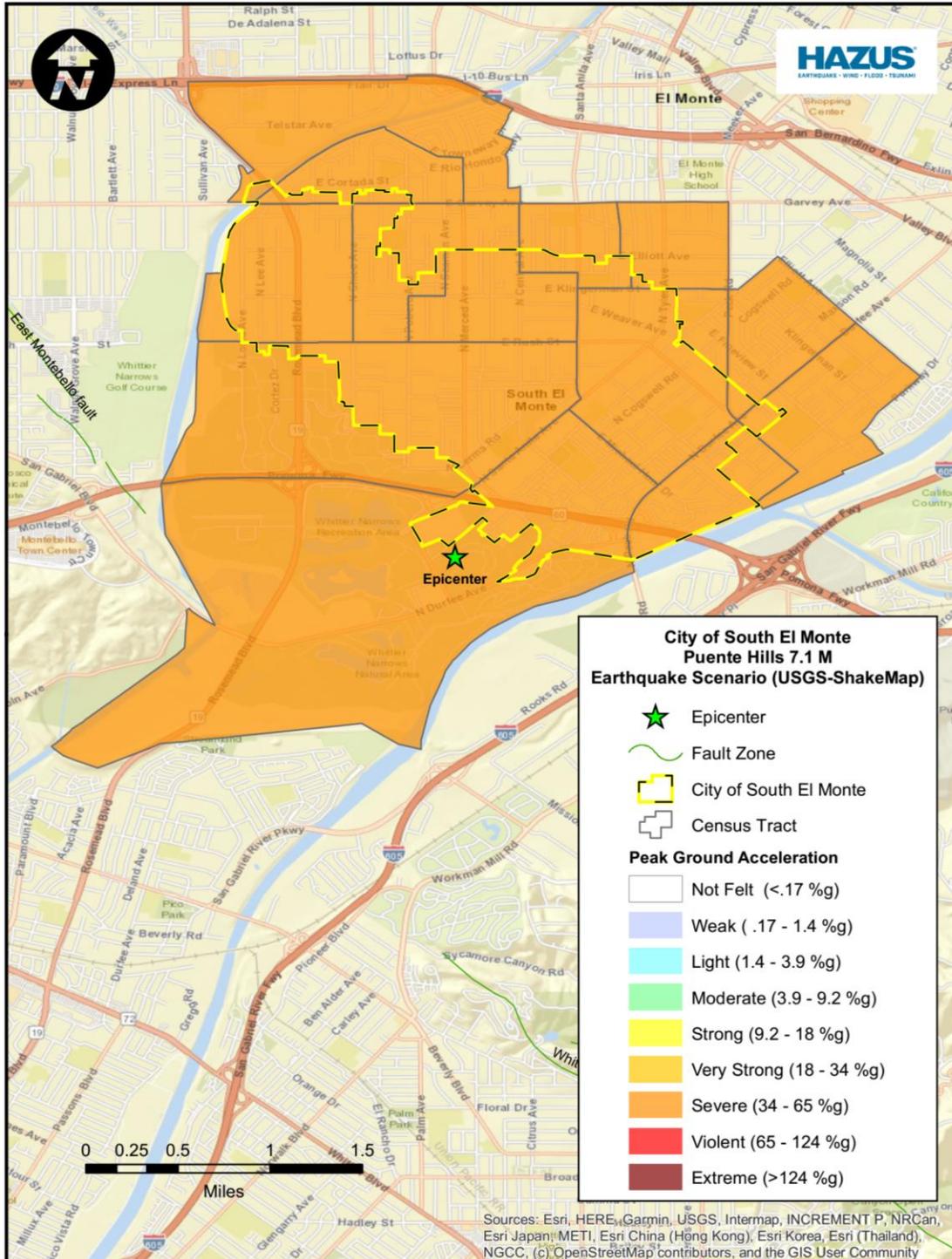


Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
California	Los Angeles	48,374	2,458	1,872	4,331
Total Region		48,374	2,458	1,872	4,331



HAZUS Map - Puente Hills M7.1





HAZUS Report - Puente Hills M7.1



FEMA

RiskMAP
Increasing Resilience Together

Hazus-MH: Earthquake Global Risk Report

Region Name: S_EI_Monte

Earthquake Scenario: M7.1-Puente Hills v10

Print Date: September 26, 2020

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.



FEMA

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Appendix A: County Listing for the Region

Appendix B: Regional Population and Building Value Data



General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7.69 square miles and contains 13 census tracts. There are over 10 thousand households in the region which has a total population of 48,374 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 10 thousand buildings in the region with a total building replacement value (excluding contents) of 4,331 (millions of dollars). Approximately 88.00 % of the buildings (and 57.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,462 and 367 (millions of dollars) , respectively.



FEMA

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 10 thousand buildings in the region which have an aggregate total replacement value of 4,331 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 117 beds. There are 17 schools, 1 fire stations, 0 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 14 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,829.00 (millions of dollars). This inventory includes over 80.78 miles of highways, 13 bridges, 332.43 miles of pipes.



FEMA

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	13	87.7481
	Segments	124	1173.1648
	Tunnels	0	0.0000
	Subtotal		1260.9129
Railways	Bridges	2	11.4413
	Facilities	0	0.0000
	Segments	41	101.4307
	Tunnels	0	0.0000
	Subtotal		112.8720
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	3	88.3146
	Tunnels	0	0.0000
	Subtotal		88.3146
Bus	Facilities	0	0.0000
	Subtotal		0.0000
Ferry	Facilities	0	0.0000
	Subtotal		0.0000
Port	Facilities	0	0.0000
	Subtotal		0.0000
Airport	Facilities	0	0.0000
	Runways	0	0.0000
	Subtotal		0.0000
		Total	1,462.10



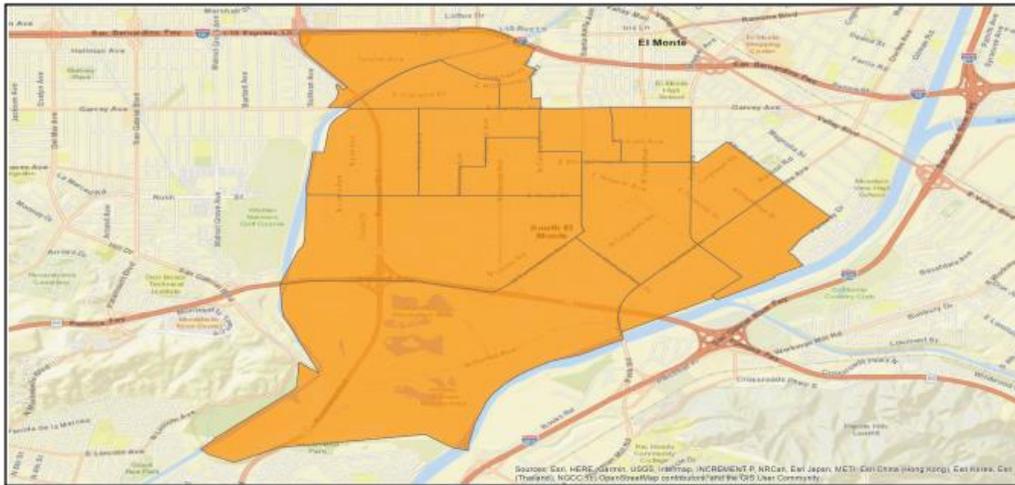
Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	6.2394
	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		6.2394
Waste Water	Distribution Lines	NA	3.7436
	Facilities	2	327.2234
	Pipelines	0	0.0000
	Subtotal		330.9670
Natural Gas	Distribution Lines	NA	2.4958
	Facilities	0	0.0000
	Pipelines	2	28.2885
	Subtotal		30.7843
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		0.0000
Electrical Power	Facilities	0	0.0000
	Subtotal		0.0000
Communication	Facilities	0	0.0000
	Subtotal		0.0000
	Total		368.00



Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	M7.1-Puente Hills v10
Type of Earthquake	
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	0.00
Latitude of Epicenter	0.00
Earthquake Magnitude	7.08
Depth (km)	0.00
Rupture Length (Km)	0.00
Rupture Orientation (degrees)	0.00
Attenuation Function	



Direct Earthquake Damage

Building Damage

Hazus estimates that about 4,684 buildings will be at least moderately damaged. This is over 44.00 % of the buildings in the region. There are an estimated 629 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

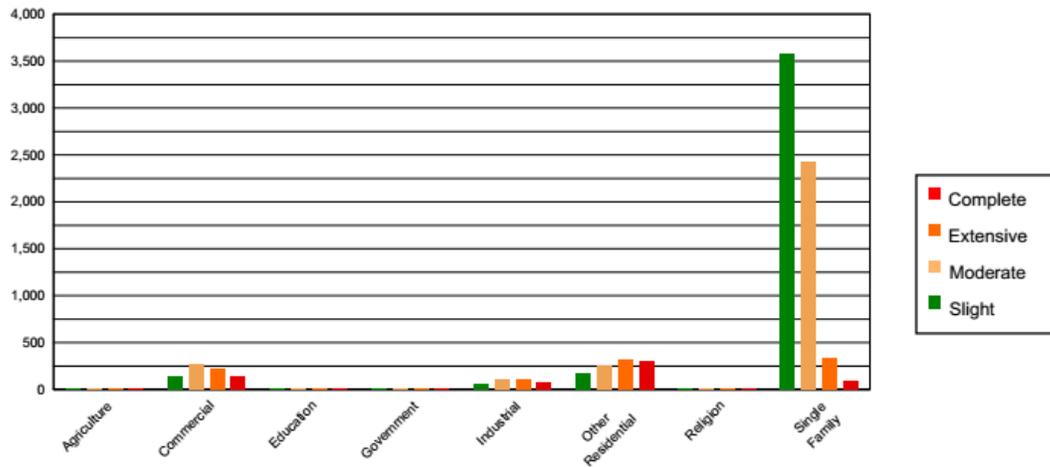


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	2.07	0.10	3.95	0.10	4.90	0.16	2.98	0.30	2.10	0.33
Commercial	69.98	3.47	137.13	3.47	262.90	8.54	221.21	22.62	145.77	23.17
Education	3.38	0.17	5.71	0.14	6.82	0.22	3.97	0.41	2.12	0.34
Government	1.25	0.06	2.28	0.06	4.13	0.13	3.73	0.38	2.62	0.42
Industrial	23.50	1.17	48.99	1.24	107.94	3.51	97.60	9.98	69.97	11.12
Other Residential	79.43	3.94	167.65	4.24	247.89	8.06	310.44	31.75	304.59	48.41
Religion	4.50	0.22	8.24	0.21	11.59	0.38	8.84	0.90	5.82	0.93
Single Family	1832.34	90.87	3579.41	90.54	2430.98	79.00	329.04	33.65	96.23	15.29
Total	2,016		3,953		3,077		978		629	



Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	1916.98	95.07	3760.56	95.12	2566.10	83.39	353.29	36.13	111.35	17.70
Steel	14.18	0.70	29.30	0.74	86.28	2.80	93.66	9.58	64.63	10.27
Concrete	19.89	0.99	41.77	1.06	63.87	2.08	55.98	5.73	39.54	6.28
Precast	17.07	0.85	39.23	0.99	96.91	3.15	84.20	8.61	55.68	8.85
RM	44.42	2.20	56.47	1.43	112.56	3.66	95.62	9.78	46.46	7.38
URM	2.02	0.10	6.16	0.16	17.57	0.57	18.47	1.89	24.57	3.90
MH	1.88	0.09	19.87	0.50	133.88	4.35	276.59	28.29	287.00	45.61
Total	2,016		3,953		3,077		978		629	

*Note:
 RM Reinforced Masonry
 URM Unreinforced Masonry
 MH Manufactured Housing



Essential Facility Damage

Before the earthquake, the region had 117 hospital beds available for use. On the day of the earthquake, the model estimates that only 0 hospital beds (1.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 4.00% of the beds will be back in service. By 30 days, 21.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	1	1	0
Schools	17	17	10	0
EOCs	0	0	0	0
PoliceStations	0	0	0	0
FireStations	1	1	1	0



Transportation Lifeline Damage

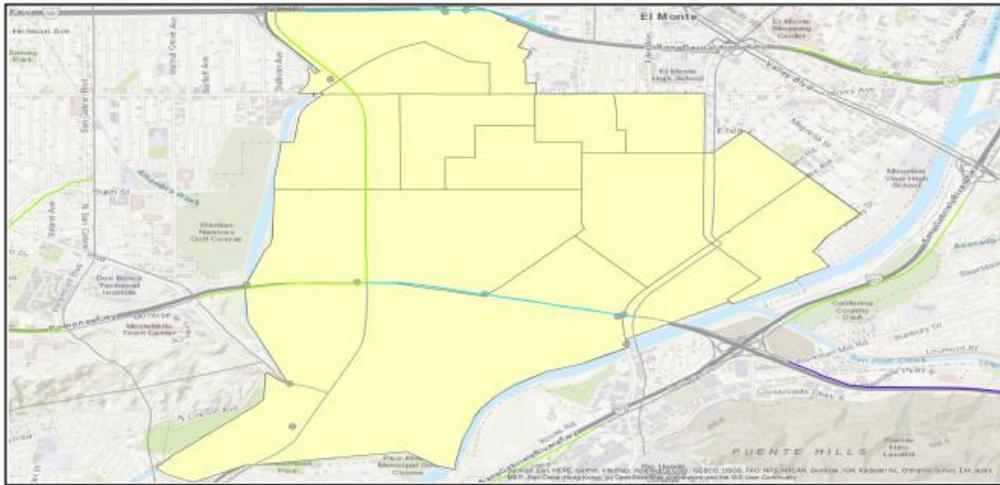




Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations_			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 % After Day 1	After Day 7
Highway	Segments	124	0	0	114	114
	Bridges	13	1	0	11	13
	Tunnels	0	0	0	0	0
Railways	Segments	41	0	0	32	32
	Bridges	2	0	0	2	2
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	3	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.



Table 7 : Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	2	2	0	0	2
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	194	208	52
Waste Water	116	105	26
Natural Gas	22	3	1
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	10,889	4,715	0	0	0	0
Electric Power		7,966	4,942	2,021	385	11



Induced Earthquake Damage

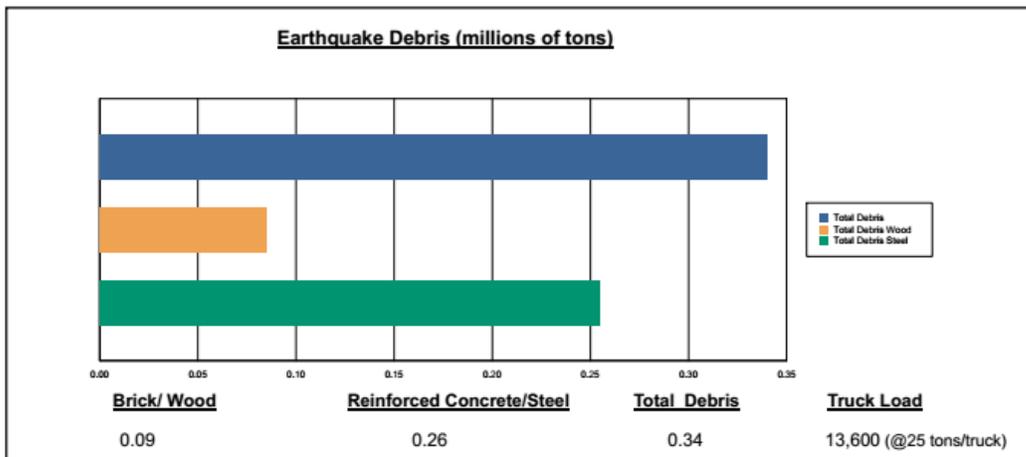
Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 1 ignitions that will burn about 0.03 sq. mi 0.39 % of the region's total area.) The model also estimates that the fires will displace about 291 people and burn about 20 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 340,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 25.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 13,600 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

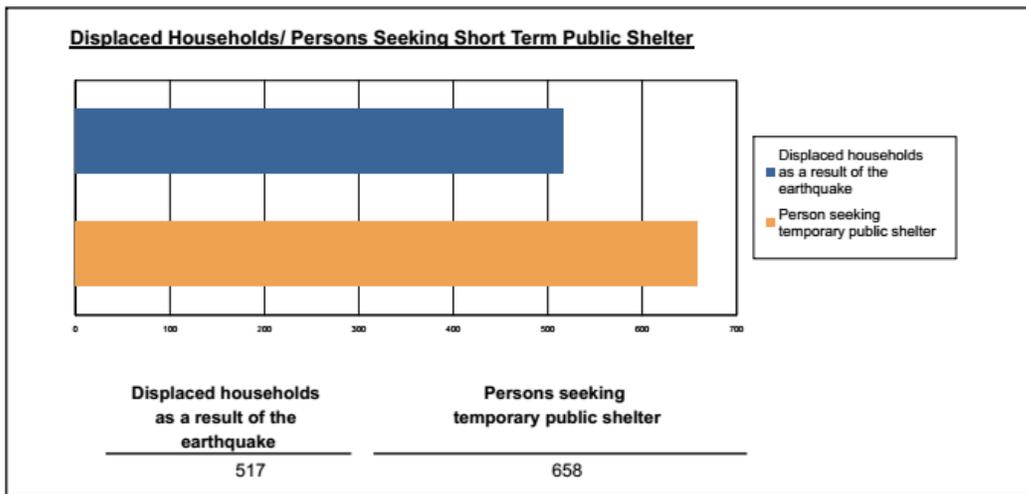




Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 517 households to be displaced due to the earthquake. Of these, 658 people (out of a total population of 48,374) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake



Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	5.36	1.63	0.27	0.54
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	13.51	4.01	0.65	1.28
	Other-Residential	108.71	27.57	2.95	5.49
	Single Family	77.30	12.48	0.73	1.28
	Total	205	46	5	9
	2 PM	Commercial	325.80	98.56	16.63
Commuting		0.00	0.00	0.00	0.00
Educational		94.25	28.16	4.76	9.33
Hotels		0.00	0.00	0.00	0.00
Industrial		99.59	29.50	4.79	9.35
Other-Residential		24.17	6.14	0.67	1.23
Single Family		17.58	2.86	0.19	0.29
Total		561	165	27	53
5 PM		Commercial	236.87	71.38	12.08
	Commuting	0.00	0.00	0.00	0.00
	Educational	8.32	2.49	0.42	0.82
	Hotels	0.00	0.00	0.00	0.00
	Industrial	62.24	18.44	2.99	5.84
	Other-Residential	40.28	10.25	1.13	2.06
	Single Family	30.13	4.90	0.33	0.49
	Total	378	107	17	33



Economic Loss

The total economic loss estimated for the earthquake is 1,398.87 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

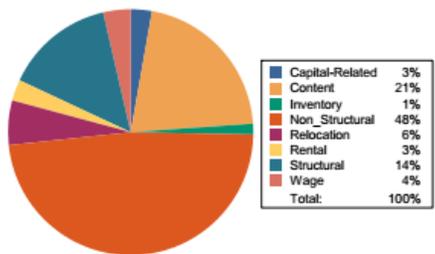


Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 1,276.32 (millions of dollars); 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 29 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

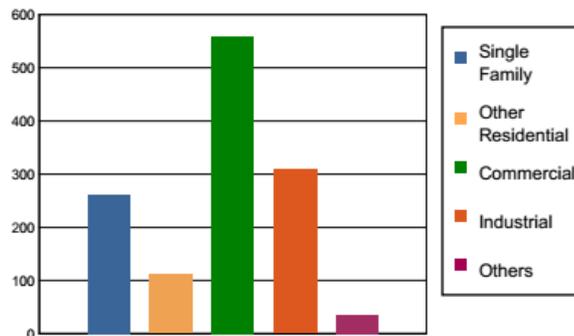


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	2.6314	38.3187	4.7638	0.8653	46.5792
	Capital-Related	0.0000	1.1160	29.5909	2.9566	0.2177	33.8812
	Rental	5.8299	4.6475	22.7952	1.7850	0.5662	35.6238
	Relocation	21.2799	5.0754	35.4085	7.9769	3.7244	73.4651
	Subtotal	27.1098	13.4703	126.1133	17.4823	5.3736	189.5493
Capital Stock Losses							
	Structural	32.4766	14.0785	92.0178	38.8691	5.6455	183.0875
	Non_Structural	156.2844	68.5920	229.7923	142.1873	16.8872	613.7432
	Content	46.4791	15.3280	106.4523	95.4687	7.5667	271.2948
	Inventory	0.0000	0.0000	4.1942	14.3489	0.1023	18.6454
	Subtotal	235.2401	97.9985	432.4566	290.8740	30.2017	1086.7709
	Total	262.35	111.47	558.57	308.36	35.58	1276.32



Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1173.1648	0.0000	0.00
	Bridges	87.7481	10.0286	11.43
	Tunnels	0.0000	0.0000	0.00
	Subtotal	1260.9129	10.0286	
Railways	Segments	101.4307	0.0000	0.00
	Bridges	11.4413	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	112.8720	0.0000	
Light Rail	Segments	88.3146	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	88.3146	0.0000	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Total		1,462.10	10.03	



Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	6.2394	0.9365	15.01
	Subtotal	6.2394	0.9365	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	327.2234	110.9517	33.91
	Distribution Lines	3.7436	0.4704	12.57
	Subtotal	330.9670	111.4221	
Natural Gas	Pipelines	28.2885	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	2.4958	0.1612	6.46
	Subtotal	30.7843	0.1612	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Communication	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	367.99	112.52	



Appendix A: County Listing for the Region

Los Angeles, CA

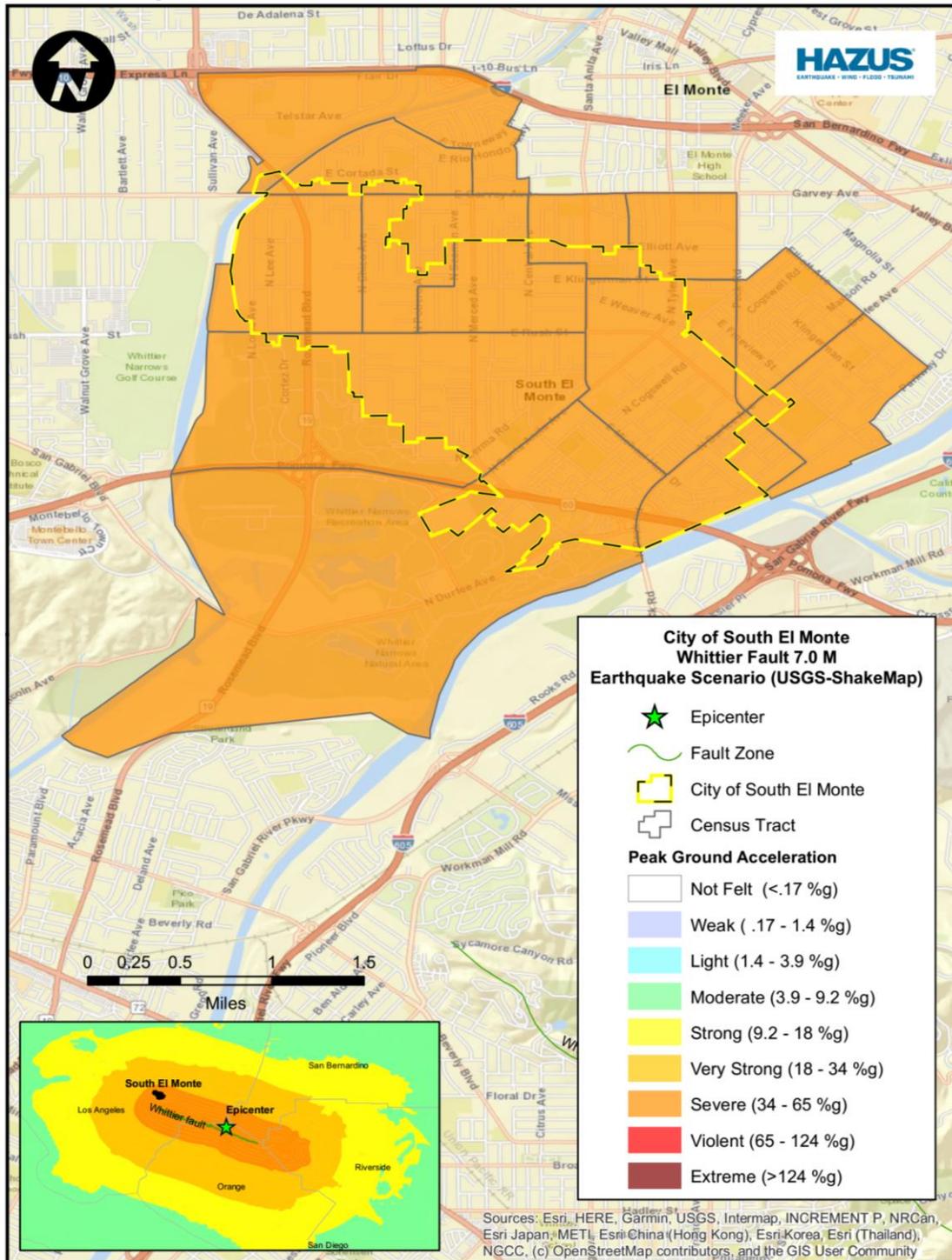


Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
California	Los Angeles	48,374	2,458	1,872	4,331
Total Region		48,374	2,458	1,872	4,331



HAZUS Map - Whittier M7.0





HAZUS Report - Whittier M7.0



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RiskMAP
Increasing Resilience Together

Hazus-MH: Earthquake Global Risk Report

Region Name: S_El_Monte

Earthquake Scenario: M7.0-Whittier alt 2 v10

Print Date: September 26, 2020

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.



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General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7.69 square miles and contains 13 census tracts. There are over 10 thousand households in the region which has a total population of 48,374 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 10 thousand buildings in the region with a total building replacement value (excluding contents) of 4,331 (millions of dollars). Approximately 88.00 % of the buildings (and 57.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,462 and 367 (millions of dollars) , respectively.



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Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 10 thousand buildings in the region which have an aggregate total replacement value of 4,331 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 82% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 117 beds. There are 17 schools, 1 fire stations, 0 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 14 hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 1,829.00 (millions of dollars). This inventory includes over 80.78 miles of highways, 13 bridges, 332.43 miles of pipes.



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Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	13	87.7481
	Segments	124	1173.1648
	Tunnels	0	0.0000
	Subtotal		1260.9129
Railways	Bridges	2	11.4413
	Facilities	0	0.0000
	Segments	41	101.4307
	Tunnels	0	0.0000
	Subtotal		112.8720
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	3	88.3146
	Tunnels	0	0.0000
	Subtotal		88.3146
Bus	Facilities	0	0.0000
	Subtotal		0.0000
Ferry	Facilities	0	0.0000
	Subtotal		0.0000
Port	Facilities	0	0.0000
	Subtotal		0.0000
Airport	Facilities	0	0.0000
	Runways	0	0.0000
	Subtotal		0.0000
		Total	1,462.10



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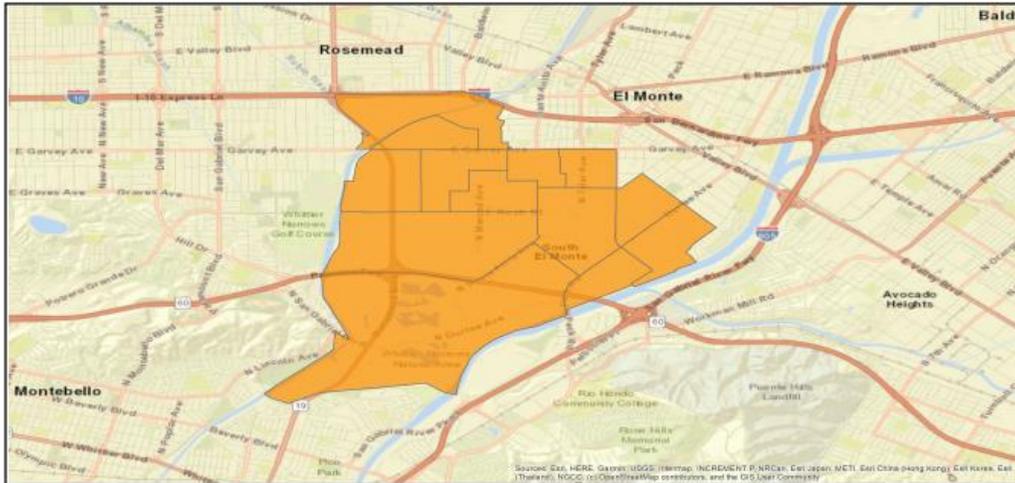
Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	6.2394
	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		6.2394
Waste Water	Distribution Lines	NA	3.7436
	Facilities	2	327.2234
	Pipelines	0	0.0000
	Subtotal		330.9670
Natural Gas	Distribution Lines	NA	2.4958
	Facilities	0	0.0000
	Pipelines	2	28.2885
	Subtotal		30.7843
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
	Subtotal		0.0000
Electrical Power	Facilities	0	0.0000
	Subtotal		0.0000
Communication	Facilities	0	0.0000
	Subtotal		0.0000
	Total		368.00



Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	M7.0-Whittier alt 2 v10
Type of Earthquake	
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	0.00
Latitude of Epicenter	0.00
Earthquake Magnitude	6.98
Depth (km)	0.00
Rupture Length (Km)	0.00
Rupture Orientation (degrees)	0.00
Attenuation Function	



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Direct Earthquake Damage

Building Damage

Hazus estimates that about 3,618 buildings will be at least moderately damaged. This is over 34.00 % of the buildings in the region. There are an estimated 361 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

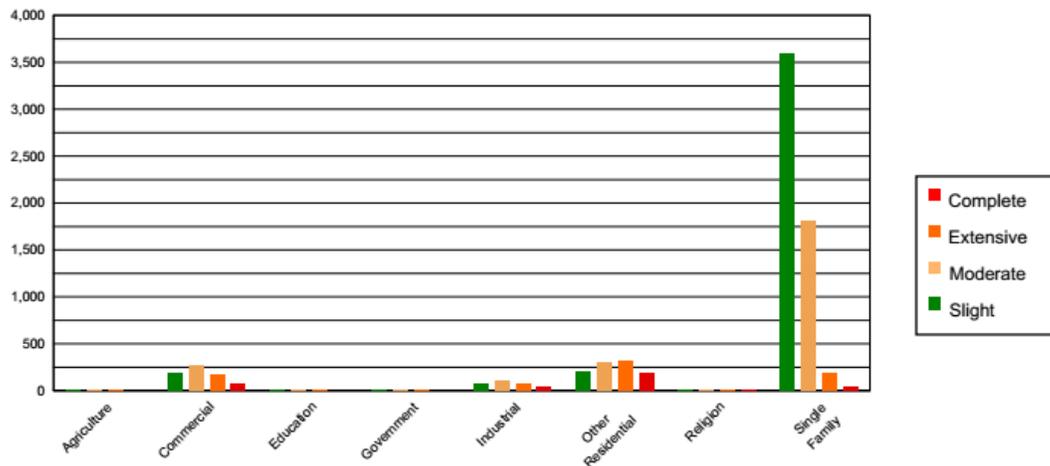


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	3.29	0.11	4.41	0.11	4.57	0.18	2.39	0.32	1.34	0.37
Commercial	138.65	4.66	181.89	4.48	267.47	10.69	168.40	22.31	80.58	22.32
Education	5.60	0.19	6.35	0.16	6.06	0.24	2.87	0.38	1.12	0.31
Government	2.51	0.08	3.00	0.07	4.17	0.17	2.87	0.38	1.45	0.40
Industrial	48.91	1.64	67.61	1.67	113.01	4.52	77.63	10.28	40.84	11.31
Other Residential	122.60	4.12	197.83	4.88	292.15	11.68	312.99	41.46	184.44	51.07
Religion	7.76	0.26	9.72	0.24	11.16	0.45	6.93	0.92	3.43	0.95
Single Family	2648.44	88.94	3587.05	88.40	1803.69	72.08	180.90	23.96	47.92	13.27
Total	2,978		4,058		2,502		755		361	



Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	2771.06	93.06	3775.10	93.03	1909.38	76.31	195.83	25.94	56.91	15.76
Steel	30.16	1.01	43.02	1.06	95.79	3.83	78.88	10.45	40.21	11.13
Concrete	37.70	1.27	53.27	1.31	63.99	2.56	43.90	5.81	22.19	6.15
Precast	38.66	1.30	56.50	1.39	103.48	4.14	64.94	8.60	29.50	8.17
RM	87.02	2.92	73.08	1.80	107.99	4.32	66.07	8.75	21.37	5.92
URM	5.70	0.19	10.44	0.26	20.18	0.81	16.30	2.16	16.18	4.48
MH	7.47	0.25	46.45	1.14	201.46	8.05	289.07	38.29	174.76	48.39
Total	2,978		4,058		2,502		755		361	

*Note:
 RM Reinforced Masonry
 URM Unreinforced Masonry
 MH Manufactured Housing



Essential Facility Damage

Before the earthquake, the region had 117 hospital beds available for use. On the day of the earthquake, the model estimates that only 1 hospital beds (2.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 8.00% of the beds will be back in service. By 30 days, 30.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	1	0	0
Schools	17	16	0	0
EOCs	0	0	0	0
PoliceStations	0	0	0	0
FireStations	1	1	0	0



Transportation Lifeline Damage

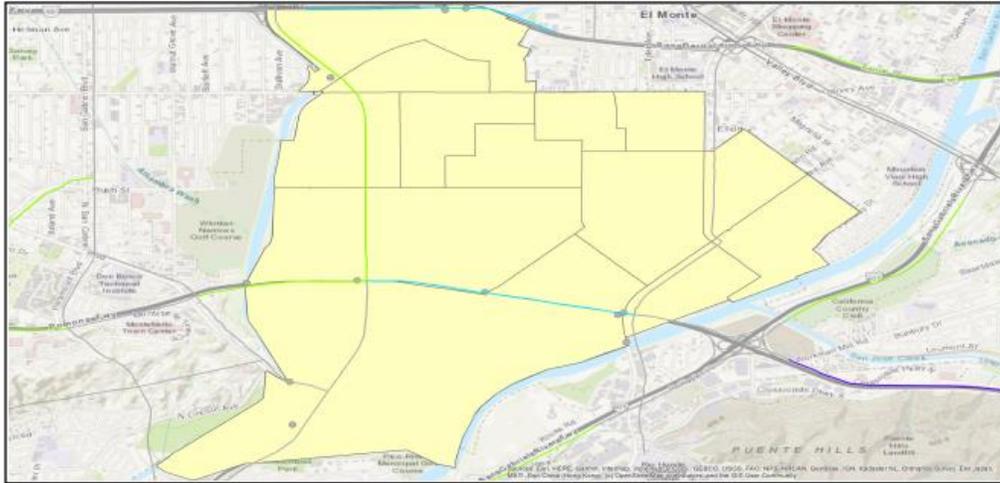




Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations_			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	124	0	0	114	114
	Bridges	13	0	0	13	13
	Tunnels	0	0	0	0	0
Railways	Segments	41	0	0	32	32
	Bridges	2	0	0	2	2
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	3	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	0	0	0	0	0
	Runways	0	0	0	0	0

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.



Table 7 : Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	2	2	0	0	2
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	194	196	49
Waste Water	116	98	25
Natural Gas	22	4	1
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	10,889	4,101	0	0	0	0
Electric Power		5,598	3,073	1,055	173	9



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Induced Earthquake Damage

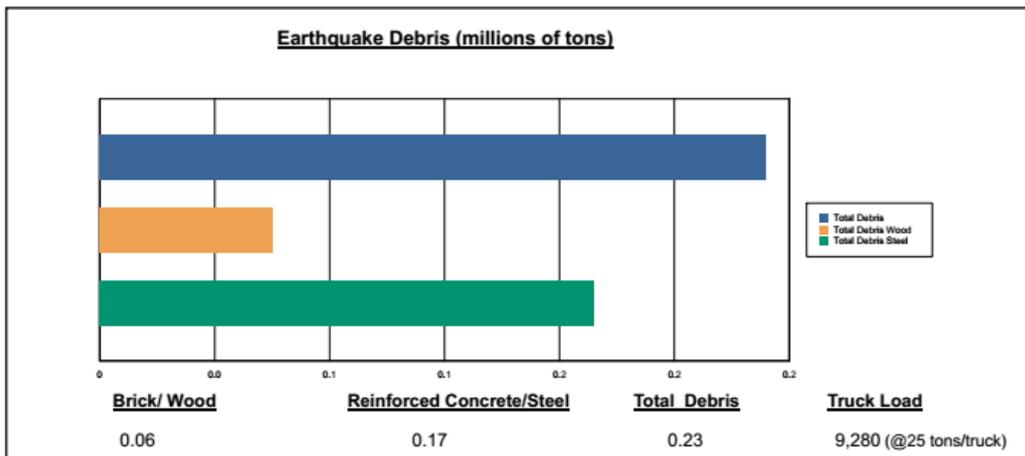
Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 1 ignitions that will burn about 0.01 sq. mi 0.13 % of the region's total area.) The model also estimates that the fires will displace about 151 people and burn about 9 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 232,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 26.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 9,280 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

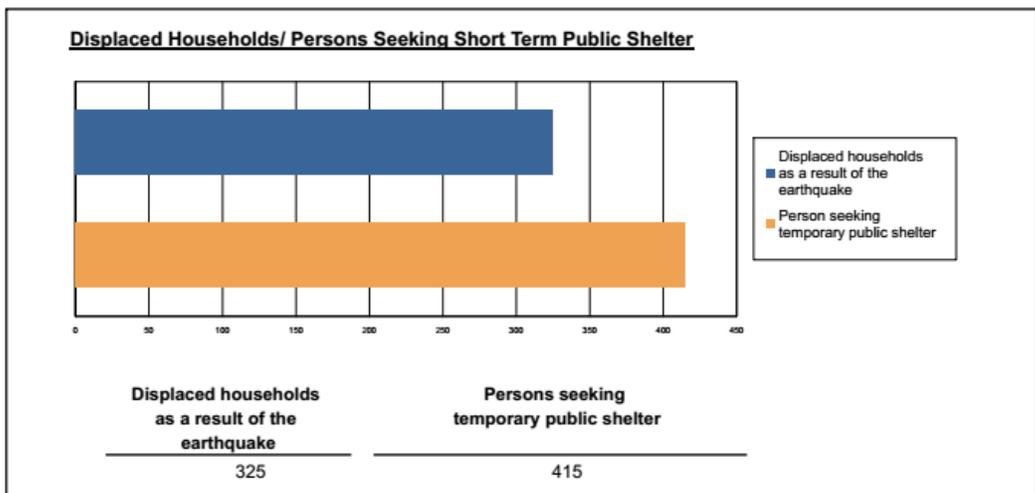




Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 325 households to be displaced due to the earthquake. Of these, 415 people (out of a total population of 48,374) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake



Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	3.33	0.96	0.16	0.31
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	8.60	2.41	0.38	0.74
	Other-Residential	72.03	17.12	1.74	3.24
	Single Family	50.33	7.22	0.38	0.66
	Total	134	28	3	5
2 PM	Commercial	202.11	57.87	9.46	18.59
	Commuting	0.00	0.00	0.00	0.00
	Educational	55.97	15.64	2.55	4.99
	Hotels	0.00	0.00	0.00	0.00
	Industrial	63.38	17.73	2.77	5.40
	Other-Residential	15.95	3.80	0.40	0.72
	Single Family	11.31	1.64	0.10	0.15
	Total	349	97	15	30
5 PM	Commercial	146.94	41.95	6.88	13.36
	Commuting	0.00	0.00	0.00	0.00
	Educational	4.90	1.37	0.22	0.44
	Hotels	0.00	0.00	0.00	0.00
	Industrial	39.61	11.08	1.73	3.37
	Other-Residential	26.61	6.36	0.67	1.22
	Single Family	19.45	2.82	0.17	0.25
	Total	238	64	10	19



Economic Loss

The total economic loss estimated for the earthquake is 987.13 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.



Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 879.09 (millions of dollars); 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 30 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

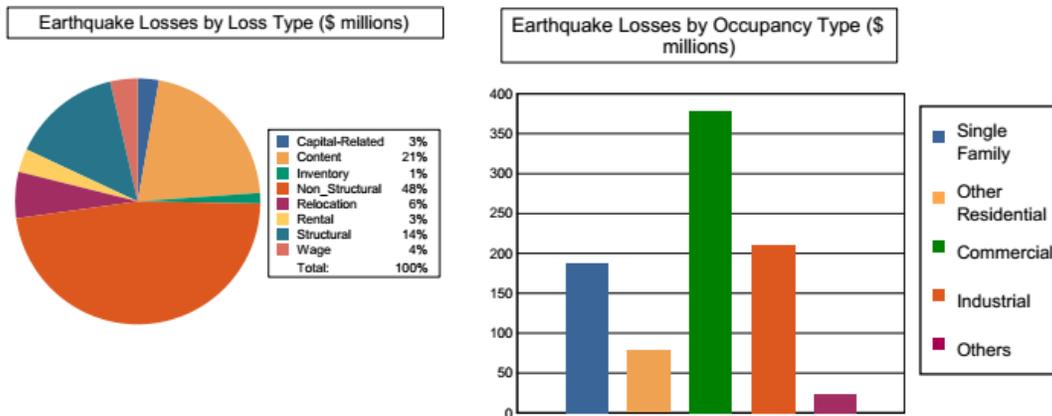


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	1.6424	27.1063	3.5079	0.6083	32.8649
	Capital-Related	0.0000	0.6967	20.7726	2.1768	0.1543	23.8004
	Rental	3.9269	3.2249	16.5839	1.3437	0.3942	25.4736
	Relocation	14.3032	3.8645	26.1492	6.1915	2.6218	53.1302
	Subtotal	18.2301	9.4285	90.6120	13.2199	3.7786	135.2691
Capital Stock Losses							
	Structural	22.2650	9.9448	63.2030	27.6989	3.9289	127.0406
	Non_Structural	111.9768	48.0539	152.0920	95.7371	11.2835	419.1433
	Content	34.7933	10.5889	70.3244	64.2918	5.0885	185.0869
	Inventory	0.0000	0.0000	2.7947	9.6764	0.0748	12.5459
	Subtotal	169.0351	68.5876	288.4141	197.4042	20.3757	743.8167
	Total	187.27	78.02	379.03	210.62	24.15	879.09



Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1173.1648	0.0000	0.00
	Bridges	87.7481	7.4174	8.45
	Tunnels	0.0000	0.0000	0.00
	Subtotal	1260.9129	7.4174	
Railways	Segments	101.4307	0.0000	0.00
	Bridges	11.4413	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	112.8720	0.0000	
Light Rail	Segments	88.3146	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	88.3146	0.0000	
Bus	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Airport	Facilities	0.0000	0.0000	0.00
	Runways	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	1,462.10	7.42	



Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	6.2394	0.8798	14.10
	Subtotal	6.2394	0.8798	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	327.2234	99.1503	30.30
	Distribution Lines	3.7436	0.4420	11.81
	Subtotal	330.9670	99.5923	
Natural Gas	Pipelines	28.2885	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	2.4958	0.1514	6.07
	Subtotal	30.7843	0.1514	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
Communication	Facilities	0.0000	0.0000	0.00
	Subtotal	0.0000	0.0000	
	Total	367.99	100.62	



Appendix A: County Listing for the Region

Los Angeles, CA



Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
California	Los Angeles	48,374	2,458	1,872	4,331
Total Region		48,374	2,458	1,872	4,331